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VOL. II.—9TH YEAR. SYDNEY: SATURDAY, AUGUST 12, 1922. No. 7.

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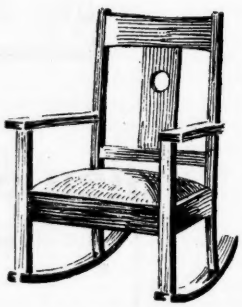

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Listerian Oration.[1]

THE INFLUENCE LISTERISM EXERCISES ON OBSTETRICS.

BY G. ROTHWELL ADAM, M.D.,
Melbourne.

BEFORE entering on the subject of this address, it is my pleasing duty to offer to the Council of the South Australian Branch of the British Medical Association my hearty thanks for their invitation to deliver the Listerian Oration. And may I offer my congratulations to the Branch on the wisdom it has shown in establishing an annual address such as this, for, apart from such benefits as must necessarily be derived from the interchange of ideas from other parts of the world, it seems to me that an opportunity is given for crystallizing our current knowledge. One of the defects of our times is that the stream of knowledge flows so swiftly that there is no time for proper digestion.

It is well, therefore, to give pause from time to time to winnow the chaff from the grain.

Many whom I am now addressing, can recall the many panaceas for various ills to which the flesh is heir that have been trumpeted forth and that have ended in sad disillusionment. It is well, therefore, ocasionally to retrace our steps and to submit established principles to further scrutiny, in order, if possible, to gain an insight into the essential laws which govern them.

In order to illustrate my thesis, I propose to discourse to you on the effect Listerism has had on the art and science of obstetrics.

To reassure you in some small degree of my qualification to speak on such a subject, I can claim the doubtful distinction of being a connecting link between the pre-antiseptic days of midwifery and the present and I was a humble, but I hope attentive, listener to the master as he expounded his epoch-making researches.

Obstetrics in the Pre-Antiseptic Days.

To realize the advantageous position which obstetrics hold to-day compared with what obtained forty-five years ago, it will be necessary to give you a brief description of the routine of a maternity hospital of that period.

On August 1, 1878, the late Dr. Milne Murray and I took up the positions of resident medical officers at the Edinburgh Maternity Hospital under the service of Dr. (now Sir) John Halliday Croom, who had just been appointed a Visiting Physician to the institution. The staff of the hospital consisted

[1] Read at a meeting of the South Australian Branch of the British Medical Association on May 25, 1922.

of four physicians, each of whom took service in rotation for a period of three months, two resident medical officers, who were appointed on the recommendation of the medical officers, a permanent matron and a number of trainees, who were given training for three months and then obtained a certificate to practise as monthly nurses and midwives. The change of trainees coincided with the change in the medical service, consequently, the only link of continuity between the out-going and incoming staff was the matron.

And yet this was the hospital associated with such historic names as the two Simpsons, uncle and nephew, and Matthews Duncan! The building was at that time a temporary one and one of our duties consisted in moving the patients from one ward to shake-downs in another once a week, in order that the room might receive a thorough cleaning, nevertheless, throughout the three months of our residence, only one patient became infected and she recovered. Only women in labour were admitted; after a bath, if time permitted, they were sent to the labour ward and put in charge of a trainee. The resident medical officer on duty examined the patient and instructed the medical student and trainee in the art of making an obstetrical vaginal examination. No antiseptic ritual was practised, no cleansing of the hands of the examiner or of the obstetric field and the same pot of vaseline was in use for the several cases from year's end to year's end. Forceps and other obstetrical instruments were simply taken from the case and applied without any sterilization; even a catheter, a metal extension affair, was used direct from a pocket case of instruments. Our instructions in those days were to expose the patient as little as possible, so that it became a work of pride for us to pass a catheter and make a vaginal examination under the bed clothes. I have known a practitioner who boasted that he carried his forceps in the tail pocket of his coat and applied the forceps without his patient being aware of the operation!

I have seen one of the Simpsons perform the operation of version in a case of *placenta prævia* without removing his greatcoat. The woman was very drunk. The patient recovered.

Many more instances might be recounted, involving procedures such as craniotomy, but it would only weary you and perhaps it is best that they should be relegated to the limbo of the bad old times.

The conduct of labour was cast on conservative lines. A careful examination, both by abdominal and by vaginal palpation, was made as to presentation and position of the fœtus and the state of the passages. No interference with the natural progress of labour was permitted, except on definite indications and the duration of the labour was estimated only by the effect on the mother and fœtus.

I remember an instance that made an indelible impression on my mind at the time and has since influenced my obstetric practice. My chief being away, I sought the help of Professor A. R. Simpson, who was acting in my chief's absence, regarding a primipara who had been some forty hours in labour without much advance. He asked me if the membranes were ruptured, if the pulse-rate or temperature were disturbed; on my answering in the negative, he said "Why worry!" and referred me to his lectures on the indications for interference in labour. Some hours afterwards the woman was delivered naturally of a living child. I do not cite this as an example of my youthful ignorance, but as an instance of the intelligent application of well-defined principles to a specific case. At the same time it must be confessed that unless intelligence is brought to bear on this conservative practice, evil results occur. It is worth noting that, while a vesico-vaginal fistula is rarely seen to-day, it was then one of the commonest of gynæcological troubles.

The management of the third stage of labour was also conservative. It was spoken of as "the delivery of the secundines," the idea being, I suppose, to remind the obstetrician that the placenta, although the most obvious, was not the only object of delivery.

Crédé's method had been lately introduced and was still under criticism, although Crédé's own instructions were carefully followed. The fundus of the uterus was gently grasped between the thumb and fingers of the left hand. When the uterus gave evidence of contracting, then and then only was expression to be made.

The act was an expression or squeezing of the placenta from the uterine cavity, not a forcible pressure of the uterine body towards the pelvic outlet, the object being to aid, not to replace, the natural efforts.

I mention that because even now I have the misfortune to witness, certainly on rare occasions, misapplied energy in delivery of the secundines.

I think I am right in saying that the Edinburgh school grasped more closely the principle on which Crédé based his method than other British clinics, with exception, perhaps, of Dublin.

Ergot was administered only after the completion of the third stage, a simple abdominal binder, without any pad over the uterus, being applied and the patient allowed to rest. If recovery was without complications, she was allowed out of bed on the tenth day and usually left the hospital within the fortnight from delivery.

It is difficult to get reliable statistics as to the mortality of puerperal sepsis for this period and more so as regards morbidity. Perhaps the most interesting record of the difference between the pre-antiseptic and subsequent period is to be found in some special statistics obtained from the New York Maternity Hospital:

"During the six months before the change of treatment was made 237 women were delivered, of whom nineteen, or 8%, died and of these seventeen, or 7.17%, succumbed to sepsis.

"During the last month the mortality was over 15%."

After changing to the antiseptic treatment for the first three months of the hospital service there were 102 deliveries without a death.

In a general way it may be justly assumed that

the introduction of Listerian methods to obstetric practice has reduced the mortality from 10% to a fraction below 1%.

Nevertheless, from the literature of the times it is evident that extensive epidemics of what was then termed puerperal fever occurred from time to time with a death-rate varying from 20% to 30%. It is within my own recollection that one of the large maternity hospitals in London was closed for an extended period because of septic infection.

It is exceedingly difficult to gain exact ideas with regard to the morbidity following child-birth of those times and it is only impressions obtained by personal experience to which reference can be made.

The most frequent serious disability noted was vesico-vaginal fistula, with its sequelæ. It must be remembered that owing most probably to the fear of sepsis, the dominant feature of the management of parturition was to leave delivery to the natural powers. Consequently the presenting part was allowed to remain in the vaginal canal after rupture of the membranes for an undue length of time, with a result that pressure necrosis occurred. Lacerations of the cervix undoubtedly were frequent, but in my experience were rarely severe. The evil effects following were due to mild sepsis preventing healing and leading to chronic cervicitis. From the same cause displacements of the uterus were not uncommon and indeed it was a saying of the time that no gynæcologist had established his position until he had invented a pessary and associated it with his name. If it be permitted to make a comparison between the morbidity of then and now I should say that vesico-vaginal fistulæ have practically disappeared and that the other injuries due to parturition occur at least as frequently.

The impression left on my mind is that lacerations of the cervix are more severe and that the relations of the bladder and cervix are more frequently disturbed than formerly. May this not be due to an impatient desire to get the delivery over? A hasty resort to forceps before the maternal and fœtal parts are prepared and a rapid delivery would appear to be responsible for many of these injuries. This may be merely a passing phase, a reaction from a blind confidence in the powers of Nature, but a hope may be indulged that in the near future there will be a more intelligent understanding of the *vis a tergo* and *vis a fronte*.

It is curious to note the degrees of sepsis that may occur and in the days under review two broad types were clearly differentiated, the severe and the mild.

As medical bacteriology did not exist, it was impossible to formulate a pathological nomenclature or classification. It did not necessarily mean that the patients whose condition was clinically classified as severe, always died or that those with so-called mild sepsis always recovered. For I have had under my care a primipara who became septic and developed an erysipelatous eruption over the vulva and buttocks and was so toxic that she lay in a state of semi-coma for twenty-four hours, yet recovered and was within eighteen months safely delivered of another child. On the other hand a so-called mild case may drag on for weeks and weeks and the patient may ultimately die—the thrombotic type as we know it to-day.

In a general way it may be said that if a patient with a severe type survived, the recovery was complete, but the patients with milder types were too frequently irreparably damaged and lived a life of chronic invalidism.

Lister's Philosophy.

It is noteworthy that the epoch-making researches of Lord Lister, in common with other fundamental discoveries, did not burst upon an astonished medical world unheralded. Just as it had been with Harvey in discovering the circulation of the blood and with Newton's formulating of the law of gravitation, so it was with Lister, other workers had nearly, but not quite, reached the goal. It remained for the master mind with the vision to see and the capacity to estimate the values of the antecedent and collateral work.

In 1847 Semmelweis, a young Austrian obstetrician, realizing the heavy mortality of child-birth, observed that in the portion of the hospital attended by students who came direct from the dissecting room, the mortality was higher than in other portions. He, therefore, prevented those students doing dissecting from entering the lying-in ward and found the rate of mortality steadily decreased.

His conclusion, therefore, that puerperal fever and surgical sepsis were due to the same thing and outside infection was perfectly correct. He, however, did not know of Pasteur and Lister's researches on fermentation and chicken cholera or wound infection and thus missed the opportunity of making the grand discovery. Others were also on the track and our genial friend, the autocrat of the breakfast table—Oliver Wendell Holmes—published a remarkable paper demonstrating the contagiousness of puerperal fever. It is an old saying and with much truth that a prophet has little honour in his own country. But to Lister this did not apply, in Scotland at all events, for, although his work met with strong and sometimes hostile criticism, his views gained steady acceptance, but, as might be expected, discussion, more especially amongst the students, took the form of the relative merits of the various antiseptics and technique in applying them. The essential principles underlying the antiseptic theory, as it was then called, were not fully appreciated. For example, I well remember a grave discussion, not unmixed with humour, as to the possibilities of conducting a labour under the carbolic spray. This spray, I may remark, was used by Lister to disinfect the atmosphere surrounding the wound. His view at that time was that the air and more especially the dust and atmosphere of a hospital were the medium of contamination by micro-organisms, although he quite realized the baleful influence exercised by an unclean hand or instrument.

For dressing a wound a small hand spray was used, while for an operation an ingenious large steam contrivance poured forth a carbolic cloud of

one in forty, enveloping both the field of operation, operator and his assistants.

I may add that carboluria was not of infrequent occurrence.

Indeed, the late Granville Bantock, an early disciple of Lister's in London, abandoned the use of the spray because of the death of some patients after abdominal section from carbolic poisoning.

The spray was the subject of much ridicule by the opponents of Lister and indeed hampered the acceptance of his methods until by further research he became convinced that the air was not the prime factor in conveying infection.

Nor was this blind faith in antiseptics when practised without intelligence, unproductive of further ills. By applying strong antiseptics in order to kill the bacteria, the natural resisting powers of the tissues were broken down and a favourable nidus for the development of microbial attack formed.

In consequence two schools of practice arose—the antiseptics and the aseptics. The battle cry of the one was "Attack the bacteria." of the other "Prevent the bacteria from attacking!" A long and acrimonious controversy arose, bringing much enlightenment. If any of you are interested in such historical matters and will refer to the medical literature of about thirty years ago, you will find much concerning this controversy of an informative and even amusing nature.

It must not be forgotten that Lister in his researches into the cause of wound infection, applied the principles of experimental philosophy by means of the then new science of bacteriology. Up to his advent the practice of medicine was for the most part empirical; by his teaching he placed it within the range of scientific study. Lister's life work forms an epoch in the history of medicine, comparable in its benefits to civilization and intellectual development with that of Gallileo, Newton or Darwin.

The Nature of Sepsis.

The principles of Listerism, as we may now term it, were not applied to obstetrics until some years after Lister left Edinburgh for London and indeed became possible only after its methods were simplified.

The essential principles of Listerism may be briefly summarized under the following three postulates:

(1) Infection of a wound is caused by micro-organisms.
(2) These organisms are conveyed from outside the body. Lister in his earlier work believed them to be bacteria derived from the air.
(3) Discharges accumulating about a wound afforded a favourable nidus for the growth of bacteria.

Hence his method of treatment consisted in purifying the air by means of a spray ejecting a volatile antiseptic, providing good drainage of discharges and sterilizing them by means of a voluminous antiseptic dressing.

Can there be any wonder that the obstetrician felt he was confronted with an insoluble problem? How could he sterilize the atmosphere about the parturient canal? He might indeed deal with the lochia by means of sterilized dressings. But traditional methods die hard and it was not until the principles of Listerism became better understood and their application simplified that the practice of obstetrics underwent a revolution.

It is perhaps not correct to use the word revolution in this connexion; it should rather be evolution. For the change came about step by step, so to speak. As might be expected, antiseptic douches to the vagina during the puerperium were among the first innovation; then the sterilizing of instruments and later still careful toilet of hands and patient's vulva.

As the new science of bacteriology advanced, Lister's principles became better known and could be applied to obstetrics with these postulates:

(1) The placental site in a parturient uterus is comparable to a surgical wound.
(2) After labour there usually exist several wounds of the parturient canal, the degree and number depending on the difficulty of the labour.
(3) The lochia is a putrescible discharge.

It is by the recognition of these fundamental facts that the application of Lister's principles have been made possible. It goes without saying that the evolution was slow and accompanied by many errors. Nevertheless, considerable success has been attained.

While for many years the placental site had been recognized as a vulnerable area, it was not until bacteriology, as applied to surgery, brought into existence by Lister, had demonstrated the part played by pathogenic micro-organisms. The raw surface left on the uterine wall, with its vast arrangement of blood sinuses loaded with clot, came to be looked upon definitely as the avenue of infection. Indeed, for long it was deemed to be the only one or at all events the only route worthy of consideration.

As the uterus contracts and expresses the placenta the muscular fasciculi shorten permanently, so constricting the vascular area that bleeding is controlled; this is retraction and of vital importance to the safety of the patient. While contraction with retraction has been long accepted as of paramount importance in controlling hæmorrhage, may it not exercise a function in sealing up the sinuses against infection? In a parenthetical way it is of interest to note that in ergot of rye we have a powerful adjunct in promoting retraction and that an extract from the pituitary gland has a potent influence over contraction of non-striated muscular fibre. But so far as I am aware it appears (I say appears advisedly) to have no effect in bringing about retraction. Many substances, foreign and physiological, will promote contraction of muscular fibre. Apparently the only substance with which we are so far acquainted to effect retraction is ergot—a foreign substance causing an essentially physiological phenomenon. But to return to our immediate subject! The gradual recognition of Listerian principles led to a concentration of ideas on to the

placental site as being the focus of *materies morbi* in infected cases.

It became a natural step then to attack this area with all the ardour of the convert.

The infected uterus was irrigated with antiseptics of varying strengths and quality, while the influence on the course of the disease as evidenced by the temperature chart was not convincing. At last, when several of our patients at the Women's Hospital died with symptoms of mercurial poisoning, our respected pathologist, Dr. Mollison, made a searching inquiry and reported that, undoubtedly, some of the deaths had been caused by using too strong mercurial uterine douches. Obviously we had attained to, if we had not gone beyond, the limit of the usefulness of chemical antiseptics.

However, the obstetrician, although defeated and somewhat dejected at what might very reasonably be looked upon as a failure of the antiseptic theory as applied to obstetrics, was not without resource. The success attained in other branches of surgery had kindled the lamp of hope and fired the enthusiasm of the then younger generation, who, delving deeper, brought to light the third of Lister's principles, *viz.*, the removal of all putrescible material from the wound area.

Thus it came about that by exploring the cavity of the uterus a varying amount of infected and infective material was discovered. Here, then, without doubt, was pointed the way to deal with septic infections of the uterus and thus was inaugurated the reign of the curette.

It may be permissible here to glance for a moment at the treatment of septic conditions of the uterus of this period. In common with the advent of most new methods of treatment the initial use of the curette was attended by many brilliant results to be followed as more experience was gained by disheartening failure.

I well remember seeing a patient with the late Dr. Hewlett whose uterus was curetted no less than four times within seven days and on each occasion a large quantity of foul débris was removed and yet the patient died!

This without doubt was an abuse of the curette; but so convinced were we at that time of the importance of cleaning the uterine cavity that all other considerations were obscured.

Such happenings, however, gradually led to a better study of the conditions, with the revelation that puerperal sepsis was not a simple matter of introduction of pathogenic organisms to a wound surface, but a very complex affair.

Not only were there varieties of organisms; different avenues of entrance; varieties of effect on different structures infected, such as lymphatic and venous thrombi and especially on the varying degrees of resistance exhibited by the individual to the micro-organisms and their toxins.

It soon came to be recognized that the most useful field for curettage and perhaps its only legitimate use was to remove products of conception that might still be retained in the uterine cavity and give rise to a saprophytic infection. But where the real pathogenic organisms were the infecting agents curettage was out of place and did more harm than good. To this day there still remains difficulty in determining the form of infection in the early stages of the illness when actual treatment is of most value. In concluding this digression let me state my personal views on this point. Prevention is the best cure for sepsis. This, of course, savours of a Hibernianism, but it is true. Should symptoms of infection develope, I believe it is good practice to explore the whole genital tract thoroughly, not only manually, but visually, investigating all lacerations and contusions. Should there be any suspicion that the uterine cavity is not clean, as evidenced by arrested involution of the uterus, an open *os internum* and sanious discharge, especially if fœtid, then the cavity is to be explored with the gloved finger or, as I prefer, a large dull curette, the object being, not to scrape away the endometrium or venous thrombi, but merely remove more or less adherent necrotic tissues and so to insure a clean uterine cavity.

The next step forward in the appreciation of Listerism to obstetricians is what Howard Kelly terms the "aseptic conscience." It is not within my function to trace the steps of the antiseptic and aseptic controversy that was waged by our surgical *confrères*; obstetrics partook of the benefits. Suffice it to say the idea gradually grew that the field of operations requires to be prepared for the exit of the fœtus to the outside world.

A scrupulous toilet of the area concerned with the labour was insisted on. Then came the question of sterilizing the vagina, which was supposed to harbour germs, so a system of copious antiseptic douching was introduced, some even going to the length of scrubbing it out with gauze tampons. This practice was, however, soon abandoned, for, after a bacteriological inquiry, the secretions of the vagina before parturition were found to be sterile.

Krönig believed the vaginal secretions to be germicidal, for, after introducing various organisms into the healthy vagina, he found it sterile after two days, the probable reason being its acid reaction.

According to Döderlein, after birth the vagina is infected with a yeast fungus and the *Bacillus vaginæ*, which secretes lactic acid. While this may be true and the vagina remains sterile under ordinary conditions, we know from practical experience that some organisms such as the gonococcus are resistant and flourish even in such a medium. Moreover, repeated vaginal examinations and even the rush of the *liquor amnii* dilutes and impoverishes this defence. So it came about that experience taught us to confine our efforts to sterilize the field of operations to the vulva and buttocks, limiting the number of vaginal examinations and making them under visual control. Indeed, vaginal examinations came to be recognized, even with every care, as the weak link in the antiseptic chain.

As is so evident in other walks of life, it is the spirit that governs action; exclusive attention to the mere details of treatment tend to become matters of routine which in process of time degenerates into slackness.

It is only by cultivating a soul antagonistic to surgical uncleanness, developing an "aseptic con-

science," that the daily round is made pleasant and profitable. No amount of antiseptics, not even the wearing of gloves, will compensate for the want of an innate sense of asepticism which abhors anything surgically unclean. Antiseptic instruments of defence are attributes, most useful attributes, but they cannot replace a sound, I might say an intuitive knowledge of things septic.

Morbidity After Child-Birth.

In casting the mind back over the benefits conferred on obstetrics by Listerism, two things stand out prominently.

In the first place, although it cannot be said that puerperal sepsis has been banished, it is clearly evident that the epidemics of what was then called "puerperal fever," which ravaged whole districts, is now a thing of the past. I remember an outburst about the years 1884 and 1885, during which one of my neighbours lost eight mothers from this cause within a few weeks. None of us passed scathless through this trying period and it was only by taking a holiday for a week or two that we were enabled to resume midwifery practice with any degree of confidence. The next impression made is that, whereas in pre-Listerian times the mortality in maternity hospitals exceeded by far that obtained where patients were attended in their own homes, now the reverse is the case. And it is the more remarkable as it is natural to suppose that patients with the worst class of infection drift to the hospital and probably come from the least sanitary areas. Unfortunately, so statistics assure us, the mortality outside the hospitals remains stationary and unfavourable. As to the morbidity following child-birth, no reliable information is obtainable, but if the number of patients who have received injuries during parturition seeking attention from the gynæcologist is any criterion, the unfavourable percentage must be high.

That the whole of this morbidity can be charged to the neglect of asepticism I do not for one moment affirm; but, on reflection, it seems as if the pendulum of confidence has swung too extensively and that the hand of man has intruded too far in assisting rather than allowing Nature to "finish the job." As has been already stated, the accoucheurs of pre-antiseptic days secured their successes by waiting on Nature and rendering assistance only when she failed. Now, to-day, we hear of forceps being applied in 40% and even 50% of cases. Is this increase in the number of assisted labours due to a failure of the propulsive powers and alterations of passages and passenger coming about during the present generation? I think not. The time is too short for such degeneration to have taken place. The causes are extensive and appear to be due to a desire on the part of both patient and doctor to get over the business in as short a time as possible and to a supreme confidence of the attendant in his aseptic routine. At all events the prevalence of vesico-vaginal fistula consequent on over delay is replaced by injuries to the cervix and pelvic floor, too often resulting from hasty interference in violation of the more conservative obstetric practice which demands time for the moulding of the head and dilatation of the maternal soft parts. It is natural for the parturient woman to express a desire for a eutocia and it is incumbent on the medical attendant to give as much relief as lies in his power compatible, not only with her immediate safety, but with her prospective health. These things, I have no doubt, seem to you to be mere platitudes, but it is sometimes wise to remind ourselves of what the experience of the ages has shown to be cardinal principles. Procedures, valuable in selected cases, become the fashion or craze, are vulgarized and are then in danger of being thrown aside altogether.

To-day Cæsarean section has been revived as the panacea of many obstetric ills.

It will be seen here that Listerian principles have rendered it possible to extend the usefulness of this operation beyond what was possible in pre-antiseptic days. The real danger appears to be its indiscriminate performance; an easy way of solving a difficult problem. The operation is an easy one, following a well-defined technique and within the capacity of any tiro versed in modern surgical practice. But the ability to do a certain operation does not necessarily imply the wisdom of doing it. To the observer of the signs of the times it seems as if the operation of Cæsarean section was being used to replace clinical acumen. If I am right in this speculation, it is a procedure that must be ultimately disastrous to obstetric science.

With the extension of this operation to various obstetric problems of hitherto unsatisfactory solution, I am in full accord. At the same time, I claim for its performance a consideration of the principles governing parturition.

Cæsarean section is not a panacea, nor is it a quick and safe means of solving a complex obstetric problem.

Moreover, it carries dangers of its own, such as imperfect repair of the uterine and the abdominal wounds and the factor of human fallibility and these risks are not only of morbidity, but of death.

But its usefulness cannot be questioned when speedy delivery is imperative and the cervix is undilated.

For example, in certain forms of *placenta prævia*, ante-partum hæmorrhage and possibly under exceptional conditions in puerperal eclampsia it places a powerful instrument for good in our hands. Its indiscriminate use is to be strongly deprecated, for there is a fear that a fashion for performing Cæsarean section has arisen. Indeed, only within the last few months it has fallen to me to prevent this operation in two instances and the final results have justified my opinion. It is necessary to exercise a broad view in these matters and, unless there are positive indications for operations, to allow Nature a fair chance of completing her efforts.

Even did time permit, it would only exhaust your patience by discussing this matter further. Is it not all written in our journals, where those who wish, may read?

Pre-Natal Care.

Permit me, however, to draw your attention, not being outside Listerian philosophy, to the pre-natal care of the prospective mother. It is a trite say-

ing "To be forewarned is to be forearmed" and it applies aptly to the obstetrician. I would plead for the establishment at every maternity hospital of an ante-natal department. Its requisites would be a director of obstetrical experience with necessary assistance, an out-patient clinic and a few beds for the admission of pregnant women requiring close observation. It should also be in close touch with the pathological laboratory. All patients applying for admission to the hospital should be sent on to the pre-natal department, where their histories would be registered, together with the result of blood and urinary examination and pelvic measurements. If necessary, treatment of abnormal conditions could then be instituted. The women would thus come to the obstetric surgeon with as complete a record as it is possible in the nature of the case to get. Besides, the value of the data thus gained would multiply many fold and the experience obtained would lead in time to organized knowledge, which is science.

A department such as I have here sketched would prove of value to the students doing their maternity course. In addition to the practical experience they would obtain, a spirit of scientific inquiry would be engendered which, I believe, would be well repaid.

It has been to me a matter of regret that more attention has not been paid to this side of obstetrics, for being, as it were, on the borderland of physiology and pathology a rich field is offered for both laboratory and clinical research. To some of the reasons why it has failed to be exploited I will refer later on.

At the Women's Hospital in Melbourne a beginning has been made by establishing a pre-maternity department, but I understand there is as yet no one in direct authority and consequently no efficient organization.

The director of such a department requires to be imbued with the scientific spirit and have sufficient enthusiasm in his work to overcome the difficulties inherent upon breaking through customs and traditions. The value to the community of such an undertaking can hardly be over-estimated. The loss by abortions and premature births must be considerable and if we add the maternity morbidity and difficult deliveries that could be foreshadowed, it does not require much intelligence to perceive the gain to the country at large.

But, above all, it would afford an opportunity of enlarging our knowledge of obstetric science nowhere else to be obtained. What is essential is that the obstetrical surgeon, the pre-natal director and laboratory chief work hand in hand.

If obstetrics is to reap the full benefit of Lister's genius, it is not by merely following matters of detail, essential though they be, but by embracing the spirit which animated him in meeting all obstacles and defeats with patience and determination.

It is time obstetrics (if not already overdue) took her place alongside medicine and surgery in contributing to the world's storehouse of knowledge of vital processes. It is true something has been done, but it seems to me many fields of opportunity lie untilled.

The tendency of scientific medicine and surgery is towards investigation of the mysteries of Nature by experimental research in other members of the mammalian group. This interrogation by means of comparative physiology and pathology has not been availed of by the obstetrician to any great extent. And yet it is conceivable that light might illuminate some of the dark problems with which obstetrics is surrounded by collaboration with the veterinary surgeon.

The Onset of Labour.

An example may be quoted, the importance of which will be obvious to all engaged in the practice of midwifery.

What do we know about the causes of the onset of labour?

Our text-books give us some unproved theories and usually end with some fantastic imagery of oriental flavour, such as: "When the pear is ripe, it falls." What is the mechanism which converts those silent, more or less rhythmical contractions of the uterus which are present during gestation, into the strong, compelling pains of labour? There is some experimental evidence suggesting that it may be due to development of the pituitary gland in the fœtus.

Again, inversion of the uterus following parturition is not uncommon in sheep, but is rare in the human female. These and other questions of practical utility present opportunities for solution, which only require the Listerian spirit to yield a rich harvest.

It is not, however, to laboratory or special research work alone that we can look for improvement in obstetrical science. That large body of hard workers whom we associate with the honoured name of general practitioner, has unrivalled opportunities of adding to the sum of knowledge. To his supervision is allotted the pre-maternal, parturient and involutionary periods of his patients; the whole drama of pregnancy is before him to use or neglect as he may.

Ideas on Education.

May I appeal to our younger colleagues to cultivate the habit of keeping a record of all their obstetrical cases, as it will repay them. In after years the written record is of incomparable value, but the merely memorized experience is inexact and unorganized.

Jenner was a general practitioner, yet by accurate observation and collating of facts he laid the foundation of much of our present knowledge of immunity. His immediate object was to prevent the spreading of small-pox; but the seed he planted has grown into a promising bush.

And here it may be asked: "Are we getting the best out of our medical societies?"

Apart from their ethical and social functions, of their utility and beneficence there is no doubt, but it would seem that the scientific work would be improved by more organization.

My experience has been that a paper on some rare or interesting subject is presented and a haphazard discussion by unprepared speakers ensues and there the matter ends. It is all very interest-

ing for the time and a pleasant evening is passed, but has our knowledge been advanced? The value of these gatherings might be enhanced if organized debates on specific subjects, notice of which had been previously circulated, were held more frequently.

Indeed, a programme for the year might be considered by the committee, the idea being that an even distribution of the various departments of medical practice could be made so as to afford interest to all.

Many men shrink from the labour of writing a set paper, but will take part in a debate if they can prepare some notes of their experiences. It will be seen that the society, from being a mere vehicle for the distribution of ideas, becomes an organ of suggestion and a stimulus to research.

This view is not new, for in pre-war days the Pathological Society of Edinburgh initiated and successfully carried out investigation on these lines.

The ancient adage "Distance lends enchantment to the view" may be paraphrased into "Time obscures memorable events." Thus it is that to many Lister's fame rests on the use of carbolic acid as an antiseptic in the treatment of wounds, but surely it is hardly necessary to recall the wonderful philosophy behind it all.

Bearing this in mind, let us see how this philosophy can be applied to further improve obstetrics. Next to being one of the world's great thinkers, Lister was a great teacher. In common with Huxley he had not only the power of clear exposition; he inspired reverence for his subject and stimulated enthusiasm.

So great was the value he placed on precept and example that the prime condition on which he consented to transfer his labours from Edinburgh to King's College, London, was that he should have full liberty to teach. London, conservative London, was at that time the one stronghold which refused to bend the knee to the new doctrine. Then, as now, she was the world's metropolis and could she be captured Lister felt that the practice of his humane philosophy would filter through to the ends of the earth. Without offending the susceptibilities of those engaged in teaching obstetrics, the question may be put: "Are we giving the best instruction attainable by our present methods?"

I take it we are all agreed that the prime requisites of obstetrical education should comprise a broad theoretical teaching with adequate practical study. With the time at our disposal in the medical curriculum, it is manifest that it is impossible to turn the student out a finished article—a master of obstetrics.

But I maintain it is possible to ground him in the principles—philosophy if you like—of obstetrics and to exemplify them in the practical class. I am well aware the exigencies of obstetric practice offer almost insuperable difficulties to this being carried out at the bedside, but if the class be taken in small sections and with sufficient and efficient assistants, the principles of obstetrics can be demonstrated on main lines.

The essential point is to make the theory and practice go hand in hand.

There are two methods only of instruction. By the one the student is given a course of lectures from which, in the majority of instances, only a confused knowledge is gained and he is then cast into the ward or laboratory to fit the theory to the practice as best he may, which seems to me a waste of effort. By the other he is instructed in the essential principles of the subject, then he is allowed to obtain more extended information from the text-book and finally he is given organized supervision in the practical application.

I believe more value is obtained by the systematic investigation of a single case conducted to its logical conclusion than can be gained by seeing twenty cases without adequate supervision. This is not spoon-feeding the student, but merely organizing instruction.

It is now some years since I have been connected with any institution engaged in the activities of teaching, hence, it may seem presumptuous on my part to offer any comments on the position obstetrics occupies in the medical curricula of our teaching bodies. But my excuse must be that "the onlooker often sees most of the game." Let us assume that the man standing at the periphery often gets a wider perspective than those at the hub of affairs, busily engaged on the details of the "demnition grind," do.

It may without further preamble be conceded that the present status of obstetrics is not satisfactory. With obstetrics as an art, the young practitioner lacks much in practical experience and as a science the opportunities it affords have been sadly neglected. The coldness with which obstetrical matters relative to instruction are discussed by members of medical faculties, evinces an indifference to the utility or to the scientific interest of the subject.

It would appear that this indifference is due to the assumption that the act of parturition is a physiological one and should, therefore, always obeying physiological laws, come to a happy termination. And the general experience of mankind tends to confirm that view. Hence obstetrics has been condemned to be the Cinderella of the medical profession with no fairy godmother to conduct her in a gilded coach to the splendour of the halls of science.

It has not been always so. If we look into medical history we find the names of many illustrious men from the time of Hippocrates who have not scorned to give of their best to further a knowledge of obstetrics.

Galen, physician in the times of Marcus Aurelius, and our own Harvey did not disdain to apply their genius to obstetric problems. Moreover, Ambroise Paré, first surgeon of his day, did not think it beneath his dignity to add something to practical knowledge of midwifery.

While it is true, in my opinion, that the attitude of mind which looks upon parturition as a physiological function and can therefore take care of itself, is an important factor in its neglect, it is not the

only one. The interference with the daily routine by the uncertainty of the time of attendance, the lengthy detention and the not infrequent feeling that skilled medical attention was unnecessary, all tend to raise a sense of disgust with midwifery practice.

Nevertheless, no successful accomplishment of a difficult operation has given me a greater thrill of satisfaction than the safe delivery, after a complicated labour, of a mother and her child.

When I was appointed Lecturer on Obstetrics and Gynæcology in the University of Melbourne, I called upon the then Dean of the Medical Faculty to inquire amongst other things the scope of the teaching desired. Owing to an alteration in the curriculum the time allotted to this subject had been cut down. "Teach them normal labour" was the answer.

In some bewilderment I sat down to write my lectures, wondering, as a teacher, how I should offer any guide to the young practitioner ushered into a case of *placenta prævia* or a shoulder presentation to manage on his own responsibility, when he had been instructed only in normal labour. As is the teacher, so is the pupil. A lack of earnestness and conviction of the utility and possibilities of the subject induces a slackness on the part of both teacher and pupil. And it is this attitude of mind which is largely responsible for the apathy toward obstetric matters. The student feels it is only a subject for examination; all enthusiasm is damped and he learns only sufficient to gain his diploma.

Can it be wondered at that under such depressing conditions the practice of obstetrics stagnates or is only galvanized into spasmodic action by some fashionable craze like "twilight sleep."

Far be it from me to deprecate useful measures devised for the relief of human suffering—it is in our bond—but let us make sure that it is for the ultimate good of mankind. A doubt may be expressed if it is a benefit to womenkind and her progeny that an eutocia should be pushed to the point of amnesia. So far, at all events, the practice is not without its dangers. In order to offer some remedy, it may be suggested that the professional and, above all, the academic mind should be stimulated to appreciate the philosophy of obstetrics.

Remuneration of the Obstetrician.

As has been already indicated, the opportunities for research are almost unlimited and an interest produced by clinical experience can become fascinating. I may be pardoned for referring to a subject which, while only remotely connected with my theme, has an important bearing on improving the practice of obstetrics.

It is the question of remuneration for services often of a very harassing nature and only occasionally is the fee earned easily. At the present time the average fee paid for this class of professional attendance is altogether out of proportion to those obtained in other departments of medical practice. How this state of things has come about it is hard to say. Perhaps it is a reflex of the estimate in which the practice of obstetrics is held by the profession and public alike. But certain it is that the custom of contracting for a flat rate for normal and complicated cases is inequitable and reacts to the detriment of both attendant and patient.

I am well aware that it is of considerable moment to the patient of limited means to be able to make a reasonably close calculation as to the cost of her confinement. But I feel sure that if she were given to understand that the custom obtained of charging one scale of fee for normal cases and a somewhat higher one for complicated ones, she would feel more assured that the extra attention she required was better requited and the doctor more satisfied with his arduous duties.

Let us look for a moment to what is involved by a flat rate.

As the present practice stands, the doctor gives attention to a pregnant woman after engagement in regard to the hygiene of pregnancy. He is liable to be called at any hour of day or night and to have the appointments of the day disarranged. He may have to make several visits to the patient to watch the progress and, if it prove a complicated labour, spend an hour or so in hard, physical work. Nor do his duties end here, for he has to supervise the lying-in for nine or ten days, with all its possible anxieties. And yet a medical man is supposed to bring into this contract a highly educated mind, an expert technique and the wisdom of experience for a small fee.

Can it be wondered that the all-important antenatal study of the patient goes by default and the temptation to get the case over as soon as may be exists.

And here again we are plunged into the maelstrom of the problems of modern medical practice.

Maternity Hospitals.

There are, as has often been reiterated, three classes of people requiring medical attention. The well-to-do and the indigent, both of whom are amply provided for. The intermediate class—the people of limited means—comprising as they apparently do the very large bulk of the population of Australia, are not by any means so well provided for. The *Maternity Bonus Act*, which had been in force for some years to assist motherhood, however successful as a vote encouraging measure, has proved futile as an obstetric benefit in proportion to the outlay. The £5 per viable child is inadequate to those needing assistance and mere waste to the well-to-do. If this money, amounting to somewhere between £700,000 and £800,000, had been utilized in assisting in establishing maternity hospitals throughout the country, where women could be confined at a moderate fee, not only would the practice of obstetrics be benefited, but the problem of the less well-to-do have been more or less solved.

As the application of Listerian principles to obstetrics becomes better understood, it is evident that organization is imperative if full benefit to the patient is to ensue. This organization, this harmonious working of doctor, nurse and antiseptic

ritual, cannot be obtained without flaw except in hospitals devoted to maternity practice. This, doubtless, explains in a measure the discrepancy between the mortality figures of the latter-day hospital and private practice.

Manifestly it is impossible for such hospitals to be efficient if they are solely dependent on the fees the majority of patients are able to afford. Assistance is necessary, therefore, at all events, towards the primary cost, nor should patients be admitted except on a doctor's order.

There is a danger of such hospitals becoming receptacles for malpraxis and hot-beds of sepsis unless carefully supervised. In Victoria this is guarded against by a system of registration and inspection with fair success.

The weak point is that only houses with five beds are registered and there are instances where evasion has been practised by a nurse taking only four patients.

In addition to such maternity hospitals, it would be well to establish in centres with sufficient population ante-natal clinics and correlated laboratory facilities.

The principle of efficient medical supervision of the infant and adolescent is already recognized, but provision for the prospective mother and her unborn child is sadly neglected.

I do not suggest that this should be a matter for Government control, but I would appeal to the community at large to make it an object of social service. Press and legislators alike are crying aloud for more population in the country. Daily, new schemes for inducing immigration are devised and yet opportunities to increase our natural birth-rate are neglected.

The community is agitated by accounts of the ravages of venereal disease in theatre and press, as to the merits of prevention or making man moral by Act of Parliament. And still little is done to rid the mother and unborn child of their stain.

A Final Word.

My theme has now reached the stage when I can with propriety propound the question to what extent Listerism has benefited obstetrics.

The surgeon has, through its influence, not only improved his technique, but has had his knowledge of surgical disease vastly extended.

The physician, too, acknowledges his indebtedness to Listerian philosophy for the profound modification his conceptions of pathological processes have undergone.

The supreme test of the late war did not in the end dim the splendour of achievement attained through the fundamental principles inculcated by the master.

And yet obstetrics is still the Cinderella of medicine.

It is doubtless true that under favourable conditions the mortality has been lowered and epidemics of puerperal sepsis are no more; but has the morbidity of child-birth, bringing in its train chronic ill-health, been reduced?

The scope of various operative procedures has been extended with benefit to some obstetric problems, hitherto of doubtful solution. But has it not also opened the way to abuses which violate, not alone recognized obstetric laws, but some of the primary principles of ordinary medical practice.

To obtain the beneficence shed by Listerian philosophy on other departments of medicine, obstetrics needs to organize her teaching, bringing it into line with medicine and surgery and to have an harmonious collaboration between the clinical and laboratory requirements and an appeal to comparative obstetrics.

Those of us who are or have been devoting their professional lives to obstetric practice, may be accused, perhaps not without reason, of bias towards this subject. But I would remind our critics that obstetrics forms a part and not an insignificant part of the warp and woof of the medical web and that the efficiency of the finished article depends on the skill of the artisan.

The complex conditions of modern civilization are becoming more and more dependent on medical knowledge, so that its practice in its various departments has its appointed place in the scheme of economics.

Obstetrics alone appears to have lagged behind, not because of lack of intrinsic value, but for the reasons already referred to. It, therefore, behoves us to improve its practice and bring it into line with the other elements of the medical fabric.

A poet has said: "There is a tide in the affairs of men which, taken at the flood, leads on to fortune."

To-day the practice of medicine stands high in public confidence and not without just cause. Our predecessors laboured hard and honestly in the self-sacrifice necessary to maintain an ideal. It remains for us and our successors to watch and nurse this tide so that it turns not against us.

Nor are signs wanting that medical practice, as now conducted, is about to enter on its trial and whether it emerges from the fiery furnace of hostile criticism unrefined or pure gold depends much on the spirit animating the individual members of the profession.

While we have weighty authority for the injunction that "the labourer is worthy of his hire," it is also well to remember that the practice of medicine had its genesis in altruistic motives and to-day stands tinctured with those ideals.

And so it must be if it is to retain the favour of public opinion.

The history of Lister's professional life should be our example in ever striving towards a high ideal with an earnestness of purpose that knows no defeat.

Above all, obstetrician and teacher alike must be imbued with a profound sense of the importance of the subject, seeking by observation and experiment to understand Nature's laws.

In the words of Wordsworth:

> "Come forth into the light of things
> Let Nature be your teacher."

Reports of Cases.

A CASE OF SYSTEMIC BLASTOMYCOSIS.

BY J. R. WILLIAMS, M.D.,
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THE difficulties of diagnosis, the pathological findings, the microscopic and cultural observations, combined with the rarity of the disease, will, I trust, justify a full history of this victim of a pathogenic yeast. I have been able to find only one similar case referred to in our Australian medical literature.

D.S., male, aged thirty-five years, was admitted to the Melbourne Hospital on June 30, 1921, from the Greenvale Sanatorium with the diagnosis of tuberculous meningitis.

The patient presented all the signs of acute cerebral mischief. He was wildly delirious, irritable, resented any interference and lay coiled up on one side. He was incapable of giving a history and the following statement was obtained from his wife:

Four months ago the patient had influenza, followed by bronchitis and a right-sided pleurisy. The doctor in attendance told him his lungs were affected and sent him to the Greenvale Sanatorium. He had complained of headache and failing eyesight ever since this illness commenced. For the past week he had been delirious.

The family history was good and free from any tuberculous diathesis.

The result of the routine examination of the patient was as follows: The temperature was 36.8° C. (98.2° F.); the pulse was regular and its rate 92; the respiratory rate was 28. The tongue was furred and was protruded in the middle line. The teeth were dirty. There was no facial paresis. The systolic blood pressure was one hundred millimetres of mercury. The urine was alkaline and contained no albumin nor sugar. A dark red rash was present over the face, arms and upper part of the abdomen. The neck was very stiff and there was some extravasation of blood over the right sterno-mastoid muscle. The heart was not enlarged and the sounds were clear. The apices of the lungs were clear, but there was marked dulness, with diminished vocal fremitus and resonance, at the base of the right lung. The spleen and liver were not enlarged. The knee jerks were equal and active; the superficial abdominal reflexes were not elicited; the plantar reflexes were flexor. A double Kernig's sign was obtained. Examination of the fundi revealed optic neuritis. The leucocyte count was 16,800.

Lumbar puncture was performed and forty cubic centimetres of clear fluid under considerable pressure were removed.

After the lumbar puncture the patient became quite rational and was able to confirm his wife's statement. He added that his headache had been worse in the morning and that he had been seeing double for about a week. The rash on his body had been present for years. He was not subject to fits and had not had syphilis. There was no abnormal urinary history, but he had been very constipated for the previous fortnight.

Repeated examinations confirmed the original clinical findings, the outstanding features being the lesion at the base of the right lung and the signs of meningeal involvement. The patient had no cough and no sputum was obtainable. On three successive occasions there was no response to the Wassermann test. No chorioidal tubercles were found and the optic neuritis was not progressive. The skin condition was diagnosed *tinea versicolor*. The temperature chart showed a practically afebrile course with occasional elevations to 38.9° C. (102° F.).

The patient was in hospital for twenty-nine days and the course of the disease was a gradual decline. After the relief obtained from the first lumbar puncture he remained rational and with only slight headache for a few days. Then he complained of severe headaches and became noisily delirious. Another therapeutic puncture was therefore carried out. This condition and treatment continued till his death. He took nourishment badly, became greatly wasted and died suddenly on July 29, 1921.

The treatment consisted in large doses of potassium iodide by the mouth, aspirin and occasional injections of morphine for the headache and therapeutic lumbar puncture. This latter procedure was performed six times in all.

FIGURE I.
A Photograph of a Transverse Section of the Affected Lung.

Clinical Pathology.

The clinical pathology and the laboratory work done on the case were responsible for the diagnosis. The condition was naturally enough regarded as one of tuberculous meningitis. The clear cerebro-spinal fluid obtained at the first lumbar puncture was noted to be sticky in character and when dried on a glass slide, formed a peculiar reticulum. On centrifuging, a number of polymorpho-nuclear leucocytes and small round cells were found, but the predominating cell was an oval-shaped one, slightly shorter in length than a polymorpho-nuclear leucocyte. The nature of this cell was not recognized at first. No bacterial growth was obtained on the usual laboratory media in the usual time. As these unrecognized cells were the most constant and predominant ones in the fluid, the cultures were finally left for a longer period in the incubator and some of the cerebro-spinal fluid was incubated at 37° C. for half an hour. On examination after that time budding forms of the oval cells gave the diagnosis of a blastomycotic infection of the meninges. Unfortunately no sputum was obtainable from the patient, but the lesion of the lung was regarded as the primary focus, with systemic spread to the meninges. This diagnosis was made four days before the patient's death and the *post mortem* findings amply confirmed it.

Post-Mortem Examination.

The cadaver was that of an emaciated man. The skin showed fine, branny desquamation. There was bruising on the right side of the neck and on incising this region the sterno-mastoid muscle was found to be friable and stained with extravasated blood. Small, hard nodules, almost calcareous in nature, presented along the outer border of the muscle. The left lung was to all appearance normal; the right contained nothing abnormal in the upper and middle lobes. There were pleural adhesions along the transverse fissure. The upper two-thirds of the lowest lobe was solid. The surface was lumpy and irregular. The lower third of the lobe was collapsed. Some sticky secretion was found in the bronchi. When the solid portion of the lobe was cut, a gelatinous material exuded and transverse section across the affected area revealed that lung tissue had been replaced by a firm, sticky mass, the edges of which were irregular and invaded the normal lung tissue in that aberrant fashion seen in actinomycosis.

Scrapings from the cut surface showed the parasite in countless numbers under the microscope and sections showed the affected area to be composed of vast aggregations of the parasite surrounded by a network of damaged lung tissue with fibrotic changes. The affected area could be fittingly described as the coalescence of a large number of blastomycotic abscesses.

The mediastinal glands were enlarged, but section of these showed only acute inflammatory changes; no parasites were found.

The heart, liver, spleen, pancreas and adrenals were normal. The right kidney was a rudimentary, non-functioning structure, while the left was a large, compensatory organ showing no signs of gross fibrosis. The intestines showed a mild enteritis. Scattered through the mesentery were small, irregular, gland-like bodies, gelatinous in appearance and soft to touch. The same type of gland was found scattered over the caecum and in the adjacent mesentery. On section these glands were found to be acutely inflamed, but no parasites were seen in the section. On removing the brain excess of sticky cerebro-spinal fluid was noted. The meninges were not greatly inflamed, except at the base of the brain, and even there the inflammatory reaction was not nearly as evident as in cases of infective meningitis. The sub-arachnoid area contained little patches of glue-like excretion in the pontine area; there was one patch over the right cortex.

FIGURE II..
Micro-Photograph of Section of Lung, showing Blastomycotic Abscesses and Parasites *in situ*. Note the filmy outer capsules.

The cerebro-spinal fluid taken from the brain contained the parasite in enormous numbers. A small test tube half full was allowed to stand and the parasites settled at the bottom in a mass twelve millimetres in depth. The cord, as far as was explored, showed the mild inflammatory reaction seen at the base of the brain. On section the brain presented multiple minute abscesses close to the cortex. There were no gross collections, but tiny aggregations of the parasite. The meninges were thickened; the ventricles were dilated and contained cerebro-spinal fluid similar to that already described.

Microscopical section disclosed marked enlargement of the sub-arachnoid space, which was almost filled with a pronounced round cell reaction and numberless parasites. In the brain substance small abscesses were noted containing a blastomycotic collection in the centre and weak attempt at repair surrounding it.

FIGURE III..
Micro-Photograph of a Section Through the Meninges, showing the Sub-Arachnoid Space Crammed with a Round-Celled Reaction and Parasites.

Biological Characters of the Parasite.

The cultural and full microscopical examination of the parasite are of intense interest. The various laboratory media were inoculated with cerebro-spinal fluid and in a varying time a characteristic growth was found. The parasite grew best on blood-agar incubated at body temperature. In three days on this medium it appeared as a moist, sticky growth resembling frozen honey in droplet form, which coalesced and ran down the surface of the slope. Ascitic agar and ordinary agar in four days' time exhibited the same yellowish-white, sticky growth. Broth became turbid in the course of four to five days and broth with the various sugars added showed the same turbidity, giving the impression of a gelatinous material present in the media. Subcultures displayed the same characteristics, but the parasite grew more rapidly than in the parent culture. At room temperature growth was inhibited, but the parasite was not killed; only when the medium was dried was it necessary to make sub-cultures. This is still being done every three to four weeks and the parasite is still flourishing.

The parent parasite may be described as follows:

It varied in size and shape. The most typical cell was an elongated cellule, pointed at one end, round at the other, containing two refractile bodies and surrounded by a well-defined double-contoured capsule. Irregular threads, suggesting chlorophyll, were noted in the cell bodies and definite budding from the pointed ends of these most typical cells could be well observed. Seen with an oil-immersion lens or a No. 7 objective the parasite was of a light bluish-grey tint, deepening in colour near the refractile granules. Large and small circular cells also occurred, varying in size from slightly larger than a red blood corpuscle to slightly larger than a polymoropho-nuclear leucocyte. The capsule and interior structure of these cells did not differ from that of the oval type, but more refractile bodies were usually present in the large circular type. Staining the parasite proved extremely difficult, but when it was stained with hæmatoxylin and eosin a definite outer capsule was demonstrated, which gave the impression that the structure was a large globular body consisting of a fine, external, filmy capsule, a perfectly clear area and a central mass representing the parasite as above described.

In the cultures one form and one only occurs and that is the circular form. It varies in size considerably and is much smaller than the original circular variety. In no culture have I seen anything approaching the elongated oval variety which predominated the picture in the original cerebro-spinal fluid.

To complete the investigation, some of the original cerebro-spinal fluid was injected intravenously into two rabbits, intramuscularly into one guinea-pig and intraperitoneally into another. From one rabbit the parasite was recovered after nearly five months. The kidneys were found to be large and granulomatous and on section the parasites were easily discoverable in the renal tissue. In the other animals the injections proved resultless.

Parasitology.

The literature on the topic of blastomycosis is fairly

abundant. Sporadic cases similar in nature to this one occur all over the earth. The 1919 edition of Muir and Ritchie's "Bacteriology" gives a concise few pages on the subject and deals with parasites in many ways identical with the one here described. In Tanner's translation of Guillermond's "Yeasts" thirty-six varieties pathogenic to man and animals are described. It is a matter of common clinical experience that yeasts and allied parasites, for example, actinomycosis, exist saprophytically on fungating carcinomata of the breast, mouth and neck. The majority of those described by Guillermond belong to this category. In nearly all cited cases the parasites have gained access to the general circulation through a skin lesion and the course has always been extremely chronic.

The inhalation method of infection is the next most common and to this list must be added the case here described. In the routine examination of sputum in cases of chronic lung diseases yeasts are frequently met with, but their toxicity or their relation to the chronicity of the disease has not been investigated. The pathogenic yeasts appear, however, to gain a foothold in a lung apparently without a pre-existing lesion.

The case cited by Swift and Bull, of Adelaide, of a primary blastomycotic lesion of the central nervous system is of pronounced interest, as the findings resemble closely those of this case. One point of difference is very striking. In no culture or examination whatever have I been able to demonstrate evidence of mycelial formation.

Mr. H. R. Dew, F.R.C.S., of the Walter and Eliza Hall Institute, has informed me that he has observed it in the kidney of the infected rabbit, but it has not been demonstrable in his sections. Under such circumstances it is extremely difficult to classify the parasite, as it differs in this respect from all the types quoted by Guillermond.

My thanks are due to the whole of the staff of the Walter and Eliza Hall Institute for their ever-ready help, to Mr. D. L. Cook for his drawing of a typical field and to Mr. Hector Marriott for his excellent photomicrographic plates.

References.

Muir and Ritchie: "Bacteriology," 1919.

Guillermond (Tanner): "Yeasts."

H. Swift and L. B. Bull: "Notes on a Case of Systemic Blastomycosis, Blastomycotic Cerebro-Spinal Meningitis," THE MEDICAL JOURNAL OF AUSTRALIA, September 29, 1917, pages 265 to 267.

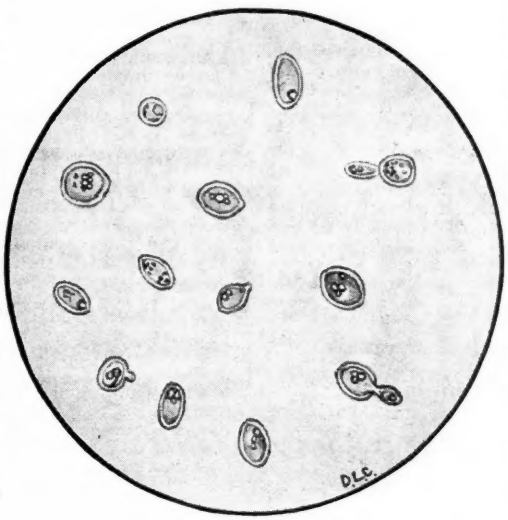

FIGURE IV.

A Typical Field: Parasites in Cerebro-Spinal Fluid.

STRANGULATED RIGHT INGUINAL HERNIA CONTAINING STOMACH AND TRANSVERSE COLON.[1]

BY A. F. STOKES, M.B., B.S.,
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ON February 15, 1922, I was called to see S.H., forty-two years of age, a weak-minded, deaf mute, a chronic asthmatic and a very thin man of poor physical development. There was a history of his having had a right-sided rupture since childhood; he had never worn a truss. There had been some difficulty in pushing it back at times. On February 14 it became painful and could not be reduced. An attempt was made again on the morning of the fifteenth without success. The patient had vomited. He has always suffered from indigestion. The teeth are very bad. His bowels act regularly.

On examination a large right inguinal hernia about the size of a fully distended bladder was detected. The testicle could be felt below it. The tongue was dry and furred. The pulse was regular; its volume good and its rate 80. Moist râles were heard at the bases of both lungs posteriorly. The specific gravity of the urine was 1,022; its reaction was acid; it contained neither albumin nor sugar.

On account of the history and nature of the case I attempted reduction under chloroform but without success.

The patient was taken to hospital and operated upon four hours later.

Operation.

An incision was made over the neck of the sac from just above the internal ring downwards for ten centimetres. The pillars of the external ring were divided and the tissues separated down to the sac, which was opened. A large visceral balloon protruded and behind it was a thick strand of omentum, strangulated and adherent to the bottom of the sac. This was pulled down a little further, tied off and pushed back into the abdominal cavity. The gut was then pulled further out and proved to be the major portion of the stomach with the collapsed transverse colon and omentum behind it. They were easily reduced into the abdominal cavity. The strand of omentum was the only part of the hernial contents that had been strangulated. Bassini's operation for cure was performed, except that, as the neck of the sac was very wide, the stump was pulled upwards and outwards behind the internal oblique and sutured there.

On the table before operation it was noticed that the hernia was semi-translucent. This was no doubt accounted for by the presence of the gas-distended stomach in the sac. Six hours after the operation the patient was very restless, starting and sitting up in bed. The pulse was rapid and irregular; he was coughing occasionally and the respiration was of the Cheyne-Stokes type.

Progress After Operation.

He very nearly died on the second day after the operation, but with stimulants he improved gradually till, on February 20, his people took him home, as they thought they could manage him better amongst surroundings with which he was familiar. It was a good move, as he became much less restless and lay quietly in bed.

The stitches were removed on February 22 and it was then possible to locate the position of the stomach, as the patient could be kept still for a few minutes at a time. The upper limit of the stomach resonance was at the level of the umbilicus and the lower limit just above the pubis, extending about five centimetres to the left of the mid-line. The resonant area was about that of a normal stomach. The hepatic dulness was normal and there was no prominence of the lower part of the abdomen, so that it was concluded that a general ptosis of the abdominal viscera was not present.

On February 24 the stomach resonance was 2.5 centimetres higher. On March 17, a month after the operation, the stomach had returned to its normal position in the epigastrium. The general condition of the patient was very good. There was no sign of any recurrence of the hernia. His digestion was good, the cough was much improved and he was able to lie down comfortably in bed all night—a thing he had not done for very many years.

The improvement in the asthmatic condition began after

[1] Read at a meeting of the South Australian Branch of the British Medical Association on May 25, 1922.

he returned home and steadily progressed, showing that the relief of the constant downward pull on his stomach had an alleviating influence on his asthma.

At the present time, four months later, he is still very much better than he has been for years.

I have reported this case fully, as it is a very rare condition.

Reviews.

FORENSIC MEDICINE.

"AIDS TO FORENSIC MEDICINE AND TOXICOLOGY,"[1] by Dr. W. G. A. Robertson, has reached its ninth edition. This fact is evidence of its value.

It constitutes an excellent synopsis of the subject and can be recommended as a text-book for fifth-year students or general practitioners. It is well written and conveniently arranged. We can confidently say that any student who has mastered the contents, is well equipped for examination purposes as well as all likely calls in general practice.

Exception must be taken to some of the dogma propounded. For instance, under medical evidence the author, after having insisted on the practitioner having the facts of the case before him, adds that: "If he is of opinion that the medical evidence is clearly and correctly on the other side, he ought to refuse to attend and give evidence." This, in our opinion, is quite beyond his province; his only duty is to give his opinion regardless of which side it favours.

Under abortion no mention is made of air embolism as a cause of death. Everyone making an autopsy ought to be able to recognize this condition. This book being evidently meant for students, a chapter might well have been devoted to the subject of medical certificates. There is nothing more calculated to bring the profession into contempt than the certificate given with mental reservation and often actual suppression of the truth.

Analytical Department.

"RUMFORD'S GROATS."

"RUMFORD'S GROATS" are manufactured by Clifford Love & Company, Limited, of 77, Clarence Street, Sydney. Arrangements were made a short time ago for the inspection of the process of manufacture and for the analysis of the product. At the time of the visit of our inspector, additions were being made to the factory. The building operations necessitated a temporary removal of the packing process to a separate building. When the alterations and additions have been completed, the whole process will be conducted in one building.

The Factory.

The factory is a six-storied stone and brick building facing Kent Street, Sydney. The back of this building abuts on a lane. The lighting and ventilation on the several floors are sufficient. The building is apparently an old one; the floors are of wood and the boarding is irregular and to some extent defective. Our inspector was informed that the floors are swept at regular intervals. No hosing could be carried out, partly because of the nature of the flooring and partly because each floor contains openings of varying size for the installation and the passage of apparatus to the story beneath. More than one product is manufactured at the factory. On several floors stacks of bags filled with by-products from the processes of manufacture were noticed. These bags were covered with a thick layer of fine dust, which evidently emanates from the cleansing process to which the oats are subjected. Deposits of the same dust were seen on the fittings separating the individual pieces of machinery. In the opinion of our inspector, there does not seem to be any risk of contamination of the "Groats" after grinding, since the meal is at no time exposed to an extent sufficient to admit of gross soiling.

The Process of Manufacture.

The oats are emptied on reception at the factory into a hopper and from this are taken to the sixth floor, where they pass over two separators. These separators remove rough outer material and light impurities. It was noted that the oats, when received, were discoloured and evidently soiled. The primary process changes the oats into clean grain. The next step in the process is the grading. In a special room the oats are divided into four grades. The finest or "No. 1" grade alone is used for the manufacture of groats. This fine-grade grain is then dried in a kiln at a high temperature for a measured period. The dried grain is passed through a series of machines in which the husks are removed. The separated husks and dust are prevented from remaining with the grain by the action of properly adjusted fans. The husks and dust are collected in bags and are disposed of as by-products.

The husked grain is transferred in bags to the machines for grinding. The resulting meal is passed through a "sixty-mesh" sieve and the sifted meal is again roasted to insure complete drying. The cooling is effected in a special apparatus, consisting of large trays protected by enveloping layers of new calico. This calico is not washed, but is replaced by new material at each operation. After it has cooled, the meal is carried in calico-lined sacks to another building, where it is packed. The sacks were found to be clean. The meal is placed in a large, wooden bin. At the time of the inspection the bin was quite clean, though there were cracks in which material could remain indefinitely. It is admitted that the bin is not flooded nor scrubbed, but is merely cleaned by brushing. The whole process, from the time of the arrival of the oats in the factory to this stage, is conducted without any handling. The placing of the meal into the tins is done by hand. This is carried out by girls. They wear clean overalls and head coverings and they were quite clean and careful in their work. No regulations are laid down for the cleansing or regular washing of the girls' hands, but at the time of the inspection they were quite clean. The tins used are taken from a sack and are used without any preliminary steaming or other cleaning. Only new tins direct from the tin-smith's shop are used.

Analyses.

Samples of the "Groats" were collected at the factory and further samples were purchased in the open market. The following is the result of these analyses:

Constituents.	Unground Grain.	Collected Sample of Groats.	Purchased Sample of Groats.
Moisture	7.55	6.85	7.52
Fat	6.40	6.90	6.33
Proteins	11.39	12.50	11.01
Carbo-hydrates	72.34	70.67	72.45
Altered starch	Traces	Traces	Traces
Cellulose or fibre	1.01	1.56	1.40
Ash (mineral matter)	1.30	1.50	1.29
Calories per 100 grammes	402.8	405	401
Contained nitrogen	1.8	1.93	1.75
Nutritivie ratio	1: 7.4	1: 7	1: 7.8

"Rumford's Groats," as will be seen from these figures, are incomplete as a food, being deficient in protein. Notwithstanding the unsatisfactory environment of an old building for the process of manufacture, the process appears to be a safe one and the product may be classed as an oaten food of a high standard of excellence.

[1] "Aids to Forensic Medicine and Toxicology," by W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E.; Ninth Edition; 1922. London: Baillière, Tindall & Cox; Foolscap 8vo., pp. 155. Price: 3s. 6d. net.

The Medical Journal of Australia

SATURDAY, AUGUST 12, 1922.

Radium as a Therapeutic Agent.

ON another page will be found an abstract of a report by several authors on the medical uses of radium. This report is the result of an extensive study of the effects of γ rays on normal and cancerous tissues undertaken at the instigation of the Medical Research Council. The report cannot be regarded as satisfactory. It lacks a frank disclosure of many technical details of importance and the conclusions of the principal authors are half-hearted and unconvincing. In effect, Professor W. S. Lazarus-Barlow and Professor Sidney Russ have endeavoured to ascertain the value of treatment of various forms of malignant tumours with the aid of the enormous quantity of radium bromide of five grammes. Notwithstanding the claim that irradiation with γ rays from this large quantity of radium is of great value as an adjunct to surgery, the results obtained in one hundred and sixty-eight patients are disappointing. From the published table it is gathered that sixteen of these patients had apparently recovered. A few details of the clinical histories of six patients are given. The apparent cure transpires from these accounts to be freedom from recurrence for a few months in some instances after surgical removal of the tumour and irradiation and in others after energetic radium treatment alone. Surgical treatment of cancer of the tongue and of the floor of the mouth yields approximately 10% to 12% of recoveries lasting for three or more years. Of Professor Lazarus-Barlow's twenty-eight patients only one remained free from recurrence during the period of observation. It is doubtful whether the results are better than those obtained by surgery and X-ray therapy as it has been applied all over the world up to the present time. Cancers in certain accessible situations appear to be amenable to treatment by special form of heat, such as fulguration or diathermy. The evidence brought forward of the curative action of the large amount of energy in the form of γ rays in cancer would seem to be extremely indefinite.

From Professor Russ's description of the method of applying five grammes of radium bromide the disadvantages of radium as compared with X-rays become apparent. The exact distance between the skin surface and the radium is not stated. Professor Russ found it impossible to bring the radium box into actual contact with the surface of the body. The box itself meaures 11.7 centimetres in diameter and 1.7 centimetres in depth. This box is fitted into an outer box lined with lead of a thickness of three millimetres. The rays further were required to pass through one millimetre of brass before reaching the patient's skin. An erythema dose with the box in close proximity to the skin was reached in between four and five hours. According to the measurements given, the intensity of the rays at a distance of five centimetres from the applicator was 56.5%. We assume that this measurement was carried out without filters and without the passage of rays through animal tissues. Before a cancer-destroying dose could reach a tumour situated five centimetres below the surface, considerably more than a twelve-hour exposure would have to be given, since there would be loss on account of the absorption of γ rays in passing through five centimetres of tissue. It is inconceivable how a scientific investigator could publish the statement that by applying the large quantity of radium under the conditions described, "the tissues at a depth of six centimetres will receive a larger proportional dose of radiation than they would from the application of the most penetrating type of X-radiation at the present time available, the surface intensities being the same in each case." Dr. Molesworth has recently shown that, even when large applicators are employed, the loss of intensity at a few centimetres below the surface of the γ rays from radium held close to the skin is enormous as compared with the loss of intensity of X-rays delivered from a tube situated twenty centimetres from the surface. It would almost seem as if the large quantity of radium enclosed in a clumsy applicator is incapable of delivering a destructive dose to any but the most superficial growths. The costliness of the substance, added to

its very doubtful curative action, will probably seal its exclusion from medical equipment, save in the practice of biassed physicians. Its use, however, in small quantities may be justified for the treatment of skin growths without deep involvement.

Professor Lazarus-Barlow has contributed some important observations in regard to the damaging effect of γ rays on normal tissues, including blood cells. The chapter containing this information is very long, is full of tedious repetition and is difficult to follow. Moreover, the brief discussion of the results of his observations leaves the reader in some doubt as to the conclusions the author is prepared to draw. But throughout this part of the work evidence is brought out in sharp relief of a destructive action on lymphocytes, on erythrocytes, on the blood-forming organs and on certain tissues in other parts of the body. Judged entirely from the critical aspect of the onlooker, it must be assumed that radium, while being of uncertain value as a curative agent, is endowed with all the qualities of a destroyer of vital functions. In other words, the untutored reader would regard radium as too dangerous for use in therapeutics. The truth cannot be reached by observations of this kind. Professor Lazarus-Barlow has failed because he has not planned his experiments in such a manner that the physiological effect of therapeutic doses of radium can be measured in well-defined terms. Over-doses of every useful therapeutic agent can produce harmful or lethal effects. The study undertaken with this dangerously large quantity of radium has led to confusion because of the power of the agent. If a cancer-destroying dose of γ rays cannot be delivered to a tumour at a depth of six centimetres with safety to the patient, is it likely that the whole hæmopoietic system would be injured unless the exposure were unduly prolonged? The occurrence of symptoms, such as headache, sickness and persistent malaise, no doubt indicates that the irradiation is beginning to affect the healthy as well as the pathological tissues. These symptoms would serve rather as a warning that caution is needed than that the patient had been subjected to undue danger.

In these circumstances the announcement that the quantity of radium has been divided into smaller parcels for further experimental observations by other experts offers a ray of hope. Perhaps the results of continued observations with less bulky and more manageable applicators may restore the confidence in radium which Professor Lazarus-Barlow's work has destroyed.

MEDICAL TERMINOLOGY AND SLANG.

MEDICAL journals, unlike the daily and weekly popular press, depend for a moiety of their information on the writings of men untrained in the art of writing. It might be presumed that medical practitioners, being individuals with university training, would possess a general education of a high standard. A thorough knowledge of the mother tongue is certainly an essential in education. Unfortunately, few medical practitioners have the ability or take the trouble to express their thoughs in unambiguous, grammatical sentences. In many instances, no doubt, the habit of clear expression is not acquired because the practitioner finds it irksome to pay attention to the rules of syntax either in speaking or in writing. Dr. F. Guy Griffiths indulged in a paper recently read at a meeting of the New South Wales Branch of the British Medical Association in a satirical analysis of the usual contributions to medical journals. His article can be commended to all medical practitioners as an admirable, scarcely exaggerated exposure of the faults of amateur writers on scientific subjects. With the skill of an artist, Dr. Griffiths does not labour any single point, but leaves the reader to evaluate the enormity of each solecism. It may, however, be difficult for the careless reader or writer to recognize the importance of correct phraseology and of the avoidance of slovenliness in writing and speech. In order that the position may be understood, we would point out that some authors resent the work of the editor, if this work involves the recasting of sentences or the elimination of the grosser defects in sentence formation. At times it is a matter of speculation to determine the intention of the writer and an attempted paraphrase may be wide of the mark. The author in these circumstances will, not unnaturally, exhibit annoyance. He is usually unaware of his own inability to convey his thoughts in words. In other instances the author remains unaware that his work has been subjected to a pro-

cess of interpretation. He might be somewhat shocked were he to see his manuscript at the time it is handed to the linotype operator. Dr. Guy Griffiths's satire would, perhaps, be changed to sarcasm if the reckless defiance of every law of syntax on the part of some medical authors were unchecked.

From time to time we have protested against the use of hospital and laboratory slang in serious medical writings. Apart from the general objection to the use of ridiculous combinations of words, such as "acute abdomen," "right base dull," "Wassermann negative," many of these slang expressions lead to incorrectness in thought. "Wassermann negative" is a singularly appropriate example, for "Wassermann" is the name of a man, while "negative" implies a subtraction from a natural or usual level. By applying this wrong term to a failure on the part of the serum or cerebro-spinal fluid to prevent hæmolysis under the conditions of the complement fixation test for syphilis, the writer appears to imply that the diagnosis of syphilis can be excluded. No immunologist would be so bold as to claim this interpretation of a failure to respond to a biological test. It has been contended that, as this term has been accepted by the majority of laboratory workers, it must be admitted into medical literature. No incorrect term should be employed by a careful writer, even if careless men elsewhere use it. It should be the aim of every medical practitioner who has information to convey to his colleagues, to choose his words and expressions in such a manner that false or misleading impressions are avoided and that his intention is evident on the first reading. Every contribution should be written and re-written until the writer is satisfied that each sentence conveys its message and no more than its message. Elegance in diction is not expected of the scientist; his themes are usually too prosaic for concinnity or euphony. But the readers of scientific journals have a right to expect that every word has been chosen with care and that before the writer is satisfied to pass his writings to the world, he will have tested each sentence from the point of view of clearness and accuracy. In the records of the course of the illness of a patient, the writer should remember that an English sentence must contain a subject and a predicate. Combination of words, such as "abdomen clear, urine no albumin or sugar; R.V. = 6/60" is not English.

We would urge all authors submitting articles for publication to bear certain things in mind. A very bad impression is conveyed by an untidy manuscript. Careless writing, slovenly composition and lack of revision entail much difficult and disappointing work for those in charge of the journal. Articles should be type-written. Wide spacing should be used, so that all the necessary directions in regard to the type to be used and all essential corrections may be embodied. But above all the writer should be too proud to allow even the editor to detect indications of scant acquaintance with the English language.

THE RELATION OF MACROPHAGES TO MONONUCLEAR CELLS.

DURING the last few years much discussion has taken place concerning the histogenesis and functional significance of the chief leucocytes of the blood. Ehrlich, the father of hæmatology, taught that it was possible to differentiate between cells derived from lymphatic structures and cells having a myeloid origin. He demonstrated that the lymphocyte was distinct from the polymorpho-nuclear cell or the mono-nuclear cell in the chemical nature of its granules and in its biological behaviour. Moreover, he adduced strong evidence to show that large mono-nuclear cells, transitional cells and polymorpho-nuclear cells are different phases of the same myelogenous formation. Much assistance has been given to the study of these cells by the introduction a score of years ago of what is termed the supravital method of staining. For a considerable time isolated observations have been made of a group of large cells endowed with power of phagocytosis. It was evidenced from the early stages of these studies that these cells are concerned with the protective arrangements of the body and that their appearance, although indicative of a pathological process, is a signal of the mobilization of the defensive forces of the body. Goldman described these cells as pyrrhol cells, while other hæmatologists gave them other names. In 1915, Evans introduced the term macrophage. They have been seen in enteric fever, in paroxysmal hæmoglobinuria, in malaria, in ulcerative and in subacute bacterial endocarditis and in certain forms of malignant disease. Many endeavours have been made to ascertain the site of origin of the cells and to determine the reason for their appearance and disappearance. Further light was thrown on the subject by the discovery by Evans and Winternitz in 1911 of means to produce them in rabbits. Repeated spaced injections of *Trypanblau* into the vein of the rabbit's ear caused these cells to appear in the circulating blood. Other dyes were also used and produced the same results.

A most interesting research into this matter has been undertaken by Dr. Miriam E. Simpson, in

the Anatomical Laboratory of the University of California.[1] The appearance of macrophages was provoked by the repeated injection of colloidal dyes, such as Niagara blue 2B and lithium carmine, of coarsely divided material held in colloidal suspension by colloidal substances, such as red gold, Indian ink and lamp black, of protective colloids, such as gelatine and sodium lysalbuminate. It was found that the macrophages appeared when the injected material included a substance in a colloidal state. The phenomenon resulting from these injections was strangely characteristic. After the necessary period of preparation macrophages suddenly made their appearance in the venous blood. They were not evenly distributed throughout the circulating blood. The peripheral blood contained few of these cells; the blood from the right ventricle was heavily laden with them, while the blood abstracted from the veins of the spleen and liver contained enormous quantities. At times 90% of the leucocytes of the venous blood were macrophages. It seems that the formation or liberation of these cells from the hæmapoietic organs occurs in showers. In the next place, the cells are completely removed from the blood in the lungs. After a varying time the shower ends and the blood contains so few that their presence cannot be detected by the ordinary methods of making blood cell counts. The cells are produced in excess of the amount of foreign matter required to excite their appearance. Some of the cells are loaded with the particles, but the majority contain little or none. The sudden disappearance of the macrophages from the circulating blood has been investigated, because it was held to be essential to exclude artificial causes.

It is unnecessary in this place to follow Dr. Simpson through all her experimental work or to reproduce her arguments. Suffice it to state that she has been successful in determining after the termination of the reaction an aggregation of macrophages in the liver sinusoids. She is inclined to the belief on this and other grounds that certain internal capillary systems exert a selective action on the blood cells passing through them. Dr. Simpson had a further opportunity of collecting valuable information concerning the phenomenon of the macrophage showers. The blood of a patient suffering from subacute bacterial endocarditis was being studied when the phenomenon was noted. The cells appeared with the same suddenness as was observed in the treated rabbits. It was ascertained that both in the blood of this patient and in the blood of the rabbits the shower phenomenon was associated with an increase in the viscosity of the blood, with a disturbance in the clotting of the blood, with a great diminution in the number of blood platelets and with a considerable variation in the relative numbers of the several forms of normal leucocytes in the blood.

Dr. Simpson has endeavoured to examine the relationship of the macrophages to the mono-nuclear cells. It is quite easy to distinguish these cells from polymorpho-nuclear cells by means of vital staining. Great difficulty, however, is experienced in the endeavour to distinguish the macrophages from the mono-nuclear cells under certain conditions. Their characteristics cannot be demonstrated in specimens stained by Giemsa's staining method nor by the supravital method and the oxydase tests yield no information. On the other hand, the benzidine dyes applied to the living cells yield typical pictures. The macrophages appear as unstained cells which are endowed with the power to receive and to segregate colloidal particles such as those contained in solutions of benzidine. Mono-nuclear cells have no elective affinity for these particles. Many cells are seen which appear to have the qualities of either type little defined. It is difficult to determine whether these apparently intermediate forms are macrophages or mono-nuclear cells. Dr. Simpson is convinced that if conversion of monocytes into macrophages takes place, the process is limited and does not occur indiscriminately in the general circulation. She recognizes indications of a close biological relationship between the two kinds of cell, but does not admit their identity.

The call upon the blood-forming organs in the producing of macrophage showers is obviously a very powerful one and the response is enormous. That the body should be able to produce so vast a number of highly specialized cells endowed with strong phagocytic and possibly metabolic properties at one time is surprising. Still more surprising is the fact that the body should withdraw this horde of protectors from the blood with an abruptness of the most startling kind. It is conceivable that these cells, having been sent out to act as scavengers for a brief period, are trapped at certain situations so that the tissue cells may deal effectively with their ballast of dangerous invaders. If this process actually takes place, it would seem that Nature is not afraid of expending a great amount of energy and material in emergency in her endeavour to protect the animal body. So far there is not sufficient evidence to show whether or not macrophages are concerned with the production of antibodies, but since they are certainly myeloid structures, closely allied to the large mono-nuclear cells, their function in disease processes depending on reactions to colloidal substances seems to be established.

[1] *The Journal of Medical Research*, April-May, 1922.

TONSILLAR INFECTIONS.

IN an article recently published in this journal Dr. C. P. B. Clubbe revived a movement in favour of sparing tonsils that was initiated a decade ago. He quoted at some length views that had been adduced concerning the rôle of the subepithelial collection of lymphoid tissue as a breeding ground and training school for lymphocytes. His own opinions, amply supported and strengthened by the writers whose works he cited, were to the effect that the tonsils, being endowed with functions for the protection of the body against dangerous infections, should not lightly be sacrificed. Contrasted to this rational and physiological view, there appears in medical literature all over the world a form of propaganda based on the hypothesis that nearly all human ills are referable to septic foci and that the commonest sites of these septic processes are the tonsils and the teeth. On the one hand, competent authorities maintain that the tonsils are capable

of dealing with a considerable amount of infection and of stimulating a partial or complete immunity to the infecting micro-organisms. On the other hand, other leaders of medical thought teach that the invasion of tonsils by pathogenic organisms is the signal for their extermination. Little wonder that the general practitioner becomes bewildered and adopts the extremely illogical compromise of removing portion of the alleged offender.

A large amount of investigation has been undertaken of the histology and bacteriology of those tonsils which the surgeon removes. Much of this work, again, is confusing, because pathologists have diverging views both in regard to the significance of pathological changes and in regard to the methods of isolating bacteria from the removed tissue. Drs. L. Hambrecht and F. R. Nuzum have sought to bring clearness into the question, but unfortunately their otherwise skilful and excellent work suffers from the common defect of being based on insufficient clinical data.[1] It appears that two hundred and eighteen persons were subjected to the operation of tonsillectomy. Of these persons, one hundred and thirty-seven had suffered from repeated sore throat, thirty had suffered from frequent catarrh, seventeen were mouth breathers, seventeen had had one or more attacks of rheumatism and fifteen had *otitis media*. It may be questioned whether these indications in all instances justified the surgical treatment. The authors found that ninety-one of the removed tonsils were in a condition of chronic lacunar inflammation, while a chronic interstitial inflammation was present in forty-six. A chronic peritonsillitis was present in thirteen and abscess in twenty-two tonsils. Lymphatic hyperplasia was the only change detected in thirty. No information is given concerning the degree of inflammatory change, nor has any attempt been made to distinguish between tonsils that have been so changed that it would be unreasonable to expect them to perform their normal functions and those that still comprised a large proportion of healthy tissue. They mention that in some the crypts were filled with débris and the epithelium was necrotic and covered minute abscesses. The terms "frequently" and "common" in this connexion would suggest that these changes were not present in the majority. In regard to the chronic interstitial changes, reference is made to a chronic inflammatory reaction. In the absence of fuller information, it is reasonable to assume that the amount of destruction of tonsillar tissue was small. Thus, of the one hundred and fifty tonsils with evidence of chronic inflammatory lesions, one hundred or more were probably useful structures as far as function is concerned.

Drs. Hambrecht and Nuzum compared two methods of ascertaining the bacterial flora of these removed tonsils. In some instances a loop of material from the crypts was smeared directly on blood-agar plates. In other instances the loop of material was emulsified in saline solution and the emulsion used for inoculating the blood-agar tubes from which plates were made as usual. It was found that surface smears yielded 45% of hæmolytic streptococci, while the poured plate method yielded 96.1% of these streptococci. As would be expected, saprophytic staphylococci grew so plentifully on the smears as to obscure the streptococci. An attempt was made to differentiate the various kinds of streptococci. They used T. Smith and J. H. Brown's classification. Fifty-two of the tonsils yielded the *α* type, commonly known as *Streptococcus viridans*. Sixty-seven harboured the type spoken of as *α* prime, while no less than one hundred and twenty tonsils embraced the *β* type of streptococci. The differentiation between *β* hæmolytic streptococci forming narrow zones of hæmolysis and those forming wide zones was attempted, but apparently abandoned. The case for the removal of these tonsils would have appeared a good one on these findings. But there was a heavy discount to make. Fifteen of the two hundred and eighteen removed tonsils were normal in microscopical appearance. Four of these normal tonsils harboured hæmolytic streptococci, two of them contained pneumococci and the remaining nine contained staphylococci and other bacteria. The authors recognize that the number of normal tonsils is too small to justify conclusions being drawn, but they point out that hæmolytic streptococci were much more frequently found in the chronically inflamed tonsils. It is scarcely hazardous to assume that the inflammation resulted in the majority of instances from the effort on the part of the tonsils to deal with bacterial invasion. Consequently it is by no means surprising that the majority of these chronically inflamed tonsils harbour pathogenic organisms. The mere fact that hidden in the crypts of enlarged tonsils a few streptococci are struggling for a vegetative existence need not be regarded as a signal for removal. The direct evidence that these foci constitute a grave danger to their hosts is still wanting. Hitherto few instances have been recorded of remote infection by the same bacteria. If the tonsil were incapable of dealing with the invaders, a sudden overwhelming of the body with virulent streptococci with all the terrifying accompaniments of acute septicæmia would be common. Some authors endeavour to trace systemic symptoms to the flooding of the body with a hypothetical toxin of these bacteria. The studies of Drs. Hambrecht and Nuzum would indicate that the number of streptococci in the crypts is relatively small. These cocci do not form exotoxins. It is possible that products of dead bacteria may have an indirection action on the biological functions of body cells. Experimental evidence, however, tends to indicate that the absorption of dead bacteria leads to the production of harmless immune bodies for the protection of the organism, rather than substances which exert a deleterious action on the functions of the organs and tissues. It would appear that the doctrine of an elaboration of toxic products from the few bacteria which are killed and disintegrated in the tonsils, is devoid of substantial proof. If any conclusion can be drawn from the evidence at present available, it would be that the invasion of the tonsil with a few pathogenic bacteria is not necessarily a danger to the body. The tonsil is endowed with the power to deal with a considerable number of invaders.

[1] *Archives of Internal Medicine*, May 15, 1922.

Abstracts from Current Medical Literature.

PATHOLOGY.

Hæmachomatosis.

F. B. MALLORY, F. PARKER AND R. N. NYE (*Journal of Medical Research*, December, 1921) regard hæmachromatosis as a chronic disease due to a definite toxic agent which unites with the hæmoglobin set free by the normal disintegration of red blood corpuscles. From the compound thus formed hæmofuscin is deposited in various cells throughout the body. It appears first and in largest quantity in the liver; later it appears in the pancreas and other organs. Most cells readily transform the hæmofuscin so that hæmosiderin is formed. This can be readily demonstrated by the iron reaction. Other cells have little or no effect on the hæmofuscin, so that it persists in that form more or less indefinitely. The effect of the excessive deposit of pigment in parenchymatous cells (liver, pancreas, heart) is to cause necrosis of some of them, followed by active regeneration by others in certain organs (liver, pancreas). The pigment set free by necrosis is taken up in large quantities by endothelial leucocytes, which collect, sometimes in great numbers, in the stroma. The connective tissue in some of these organs, such as the liver, is gradually increased, owing to the new formation of fibroblasts, as in tumours, to form stroma for the islands of regenerated cells. The sclerosis is due to the contraction and coalescence of old stroma as the pigmented cells die off. The final result of these processes is cirrhosis of the liver, sclerosis of the pancreas with consequent *diabetes mellitus* and sclerosis of the heart. The pigmentation of the skin may be due, in part at least, as in Addison's disease, to injury to the adrenal glands. The spleen and bone marrow show no marked changes of any sort and clinically there is no evidence of anæmia. The authors found that chronic poisoning with salts of copper produces in rabbits, within six to twelve months, definite cirrhosis of the liver, with intense jaundice, followed quickly by death. The liver assumes a dark chocolate colour owing to the deposit of great numbers of yellow pigment granules in its substance. In the rabbit the pigment, which has the same staining reactions as hæmofuscin, does not undergo transformation into hæmosiderin. In a monkey, however, which died after copper poisoning of five months' duration, over half of the pigment granules in the liver cells gave a definite iron reaction. The authors think that the toxic agent which causes hæmochromatosis in man may be copper and they suggest several sources from which it may be derived, such as colouring reagents used to "copper" vegetables, antiseptics used to prevent fermentation of beer and wine and distilled liquors, due in this case to the action of acids, chiefly acetic, on brass and copper tubing used in connexion with stills.

Agglutination in the Colon-Typhoid Group of Bacilli.

O. ISHII (*Journal of Bacteriology*, January, 1922) states that formalin, in strengths of from 0.05% to 0.2%, prevents spontaneous agglutination with *Bacillus typhosus* and *Bacillus paratyphosus A* and in a lesser degree with *Bacillus paratyphosus B*. With *Bacillus coli* formalin has no effect in this regard. Formalin also prevents pseudo-agglutination to a great extent in cross agglutination tests with different sera and increases specific agglutination. Acid broth (0.2%) cultures should be used for routine agglutination tests inasmuch as acidity is useful and greatly helps in weak agglutination. Agar cultures emulsified with 0.85% salt solution or neutral broth are almost equal in susceptibility to agglutination, but certain strains have a tendency to spontaneous agglutination in broth medium. Strong or weak solutions of sodium chloride do not affect the reaction. Only traces of sodium chloride are necessary for agglutination. Glucose broth cultures and peptone water cultures show a tendency to spontaneous agglutination, which is difficult to prevent, even when formalin is used. Agar cultures show weaker agglutination than broth and peptone water cultures. Plain broth cultures give the best results. Eighteen to twenty-four hour cultures are best suited for agglutination tests. Room temperature and broth at 7° C. give better results than higher temperatures for the incubation of tests. Two or three hours are not enough for complete agglutination; the tests should be set aside and read the next day. Normal horse serum shows strong agglutination for some members of the typhoid colon group. Polyvalent *Bacillus dysenteriæ* serum has strong agglutinating power for *Bacillus typhosus* and *Bacillus coli*, as well as for the dysentery group. Old stock cultures transplanted to a fresh culture medium at first show weak or no susceptibility to agglutination; however, after a few subcultures (once or twice a day) they regain this property. For serum diagnosis six or more strains should be grown in broth medium at 37° C. for eighteen to twenty hours. Formalin (0.1%) should be added to each of the cultures, which are then all mixed together and are ready for immediate use; or they may be stored in the cold room until needed. Heavy growths yield better results when diluted two or four times with salt solution.

Melanin Pigment Granules.

D. T. SMITH (*Bulletin of the Johns Hopkins Hospital*, July, 1921) has studied the ingestion by tissue cultures of melanin pigment granules from the retina of the chick, the pig, the dog and man (child). He found that fibroblasts, clasmatocytes, endothelial cells, white blood cells, epidermal cells, endodermal cells of the intestine, pigment cells of the retina, flattened out smooth-muscle cells and epithelial cells of the amnion of the chick ingested melanin pigment granules, but red blood cells, striated muscle cells, rhythmically contracting smooth-muscle cells and certain peripheral nerve cells did not ingest the granules. In cultures from the embryo of a fish (*Fundulus*) two distinct types of cells containing pigment were seen. The first was a large cell with numerous branched processes. This was the true chromatophore which is so common in reptiles, amphibians and fish. These cells were snugly filled, even to the ends of their processes, with more or less rounded granules, each of which could be made out as a separate unit. In some of these cells the granules were black, in others yellow, reddish or light brown; but the striking fact was that no single cell had granules of more than one colour. The second type of cell containing pigment granules was the mesodermal cell, which frequently contained granules of more than one colour. These were clumped together in vacuoles. This evidence all points to the fact that these cells had ingested and not formed the granules. Native granules in the true pigment-producing cells are always individual and discrete bodies of about the same size and shape. In the case of tumours one can thus distinguish between the true pigmented tumours (those arising from pigment-bearing cells) and those in which pigment occurs as a result of the cells ingesting melanin pigment, blood pigment or both.

Primary Carcinoma of the Lungs.

T. S. MOISE (*Archives of Internal Medicine*, December 15, 1921) reports five cases of primary pulmonary carcinoma, all of which originated either in the bronchial mucosa itself or in its glands. Classification of carcinomata of the lungs on a basis of gross pathological or histological structure is difficult and unsatisfactory. The majority of tumours are seen in a late stage and while there are morphologically several definite types, the majority do not fall into well-defined groups, but present striking variations in structure in different parts of a single tumour which are especially confusing. The exact origin of tumours of the lung from the bronchial mucosa, the bronchial mucous glands or the alveolar epithelium is in general impossible to determine with certainty, but gross and microscopical evidence point strongly to a bronchial origin for many of the tumours. The lungs of persons who died of influenza during the recent epidemic, showed very regularly severe damage to the bronchial and alveolar epithelium, often associated with striking and atypical epithelial proliferative changes resembling early carcinomata. Such lesions suggest the possibility of a causal relation between influenzal infection and the recent apparent increase in carcinoma of the lungs.

PÆDIATRICS.

The Occult Disease of Childhood.

J. CLAXTON GITTINGS (*Illinois Medical Journal*, June, 1922) demonstrates the protean characteristics of the symptomatology and difficulties of diagnosis in pyelitis. It is pointed out that, whereas pyelitis may be primary without any antecedent disease, intestinal disorders very frequently precede the attack. The diagnosis can be made tentatively by means of a drop of urine on a slide without a cover glass examined with the high-power "D" objective. If the number of leucocytes exceeds ten per field there is great probability of pyelitis being present. To make certain the child should be catheterized for bacteriological study of the urine. Great importance in treatment is attached to supplying large amounts of water. If refused or vomited it may be given by nasal tube. From five hundred to seven hundred and fifty cubic centimetres (sixteen to twenty-four ounces) of water should be given to infants daily in addition to other liquids, with larger amounts to older children. The next measure in importance is to secure complete alkalinization of the urine. For infants four grammes (sixty grains) of sodium citrate a day may be the "basic dose." If no improvement occurs in five days hexamine is tried in large doses, at least one gramme (fifteen grains) in twenty-four hours for infants of five or six months. Alkalies are of course stopped and acid sodium phosphate or dilute hydrochloric acid employed. With a free supply of water there seems to be little danger of hæmaturia, but the treatment should not be continued steadily for more than six or seven days and may be followed by another course of alkali. This alternation may be continued at weekly intervals and often will be completely successful. When the pyuria persists, autogenous vaccines may be tried, although too much should not be expected from them.

Pancreatitis Following Mumps.

LOUISE W. FARNUM (*The American Journal of the Medical Sciences*, June, 1922) reports a case of pancreatitis following mumps and states that the occurrence of this complication has been reported many times, but that in only one instance has there been an autopsy to furnish objective evidence of the disease. The ordinary textbooks of medicine and pædiatrics do not mention pancreatitis among the possible complications of mumps, while the larger systems refer to it very briefly. Males seem more prone to this complication than females. It is difficult to draw any conclusions as to the frequency of pancreatitis in mild or severe cases of mumps. The duration of the abdominal symptoms is usually quite short. All authors in describing the symptoms begin with epigastric pain and tenderness. The pain, usually to the left of the midline, may be very intense and is frequently accompanied by nausea and vomiting, sometimes by diarrhœa and sometimes by a slight rise in temperature. The patient in the case described was a man aged twenty-three years, suffering from epidemic parotitis. This was followed by acute pancreatitis. A successful operation revealed a swollen, acutely inflamed pancreas with a large quantity of peritoneal exudate.

Empyema in Childhood.

FREDERICK C. PYBUS (*The Practitioner*, October, 1921) remarks that empyema is in nearly all cases a complication of pneumonia and that the pneumococcus is present in two out of every three patients examined. The condition is commonest in the early years of life and is most fatal in children under two years of age, males being much more often affected than females. Contrary to what might be expected, bronchial breathing and moist sounds can be heard in most cases over the dull area, as well as in other parts of the affected lung. This accounts for many cases of empyema being overlooked. When pus has been found in the chest, incision and drainage is the best form of treatment and the majority can be opened at the optimum position, that is, about the seventh or eighth interspace in the mid-axillary line. Chloroform as an anæsthetic was discarded as dangerous and ether, though safer, was found too irritating. In the majority of instances infiltration with novocaine was used and proved satisfactory. In 75% of cases rib resection was practised, two and a half to four centimetres being removed. Recently the cavity has been well opened and washed out with flavine solution and the wound closed with good results.

Active Immunization of Nurses Against Diphtheria.

J. V. COOKE (*American Journal of Diseases of Children*, June, 1922) presents the results of a systematic immunization of susceptible individuals in a children's hospital. The Schick test yielded a positive result in 58.5% of a group of nurses. During a four years' period all nurses with positive Schick reactions were given injections of toxin-antitoxin and as a result more than 80% were immunized. In a small number the Schick reaction remained positive after two series of toxin-antitoxin injections. As a result of the immunization there was a decrease in the incidence of clinical diphtheria among these nurses of at least 90% as compared with a previous similar period. It is relatively easy to protect an entire nursing staff from contracting diphtheria by the use of the Schick test and toxin-antitoxin injections. The authors state that this procedure should be carried out in all institutions caring for children.

The Fat Requirement of Children.

L. EMMETT HOLT AND HELEN L. FALES (*American Journal of Diseases of Children*, June, 1922) point out that fat plays an important part in the nutrition of infants and children. In addition to providing an adequate amount of fat-soluble vitamin it probably has an important influence on mineral metabolism, especially on that of calcium. Fat is probably necessary for proper digestion and utilization of protein and on this account it seems desirable to supply as much fat as protein in the diet. A great reduction of the fat in the diet increases the susceptibility to infection, especially by tuberculosis. The breast-fed infant receives a generous amount of fat, usually as much as four grammes per kilogram daily. There is little evidence that a liberal amount of fat in the diet is harmful to children with normal digestion and much evidence that fat is an important and necessary component of the diet during the entire growth period.

Effects of Tonsillectomy on General Health.

ALBERT D. KAISER (*The Journal of the American Medical Association*, June, 1922) discusses the effects of five thousand tonsillectomies performed under uniform conditions where the children were re-examined one year after operation. It was shown on analysis of the causes for operation that obstructive symptoms or evidence of tonsillar infection existed in 99% of the children. Considerable improvement in the general health was noted in those children who presented evidence of infection from the tonsil but in whom there was no tonsillar hypertrophy. No definite change was found in the child's general condition in the group operated on for hypertrophy only. The operative risk was found to be small, for ten thousand children were operated on without a surgical fatality.

Hypopituitarism.

H. LISSER (*Endocrinology*, January, 1922) claims that some practitioners base their clinicial diagnoses of disorders of the pituitary gland on the evidence contained in skiagrams of the skull showing either an enlarged or an abnormally small *sella turcica*. It does not follow that a normal-sized *sella turcica* excludes the probability of pituitary disease being present; nor does it follow that increased secretion necessitates an enlarged gland or diminished secretion an anatomically small gland. Functional excess or insufficiency can result from a gland of any size, whether large, small or normal. The signs and symptoms of hypopituitarism group themselves into a few readily recognized syndromes as follows: (*i.*) The Levi-Lorain type of pituitary infantilism. (*ii.*) The Fröhlich type of *dystrophia adiposo-genitalis*. (*iii.*) The rare Neurath-Cushing variety. The Lorain picture is that of skeletal undergrowth with genital aplasia, but without adiposity; the Fröhlich, skeletal undergrowth with genital aplasia and adiposity; Neurath-Cushing, skeletal over-growth with genital aplasia and adiposity.

Special Abstract.

THE ACTION OF RADIUM ON LIVING TISSUE.

IN 1919 the Ministry of Munitions transferred to the keeping of the Medical Research Committee five grammes of hydrated bromide, valued at £72,500, for the purpose of investigation of its therapeutic action in malignant and other disease. At first the whole of the radium was placed in the hands of the late Cecil R. C. Lyster, Professor W. S. Lazarus-Barlow and Professor Sidney Russ. Later the quantity was divided and distributed among several institutions. The results of the investigations have been published in a report by several authors.[1]

Technique.

Professor Sidney Russ explains that the radium was applied externally in a container fashioned to exclude all but the γ rays. The applicator had an average γ ray intensity of 45.6 milligrammes to the square centimetre. Professor Russ makes the statement that, though the applicator was "held as near as possible to the patient, it could not actually rest upon any part of the body." The intensity of the rays naturally decreased with an increase of the distance of the applicator from the area irradiated. At five centimetres it was found to be 63.5%, at eight centimetres 33%, at ten centimetres 22% and at fifteen centimetres 13%. The law of the inverse squares apparently does not hold good. The intensity is further diminished by the absorption of γ rays by the tissues. Various experiments were carried out to determine the limit of safe exposure of this quantity of radium bromide, encased in a particular way. It was found that no damage was inflicted on the skin at a chosen spot by the application of the capsule for a period of between four and five hours.

Clinical Application.

Professor Lazarus-Barlow, Professor Russ and Dr. Helen Chambers place on record the results obtained in one hundred and sixty-eight patients suffering from malignant disease of various forms and affecting various organs from the external application of 4.919 grammes of radium bromide. They claim that if penetrating γ radiation from radium be applied to the surface of the body under the conditions obtaining at the Middlesex Hospital, the tissues at a depth of six centimetres would receive a larger proportional dose of radiation than they would have received from the most penetrating type of X-rays available at the time of writing. At first it was thought advisable to apply the radium for a period of from six to eight hours, despite the fact that injury to the skin was induced by this dose. It had been found that this dose produced a lethal effect on round-celled sarcomata situated within six centimetres of the surface. Later, however, the applicator was not allowed to remain over any one area of skin for longer than five hours. The authors admit that carcinomata of the breast extending to a considerable depth are not completely destroyed by radium applied from two or three aspects for a total period of nine hours. They cite the clinical histories of three patients to support their contention that radiation with radium is a valuable adjunct to surgical treatment.

It was found that prolonged treatment produced a reduction in the hæmoglobin content of the blood and a diminution of the number of lymphocytes. It is held that these signs should be regarded as indications for the suspension of the treatment.

From the table published it appears that thirty-two patients with sarcoma of various organs and tissues were treated. Of these, four apparently recovered, while twenty-three died. Of seventy-eight patients with breast cancer, six were treated surgically as well as with radium. Four of these women apparently recovered, by which is meant that at the time of discharge from hospital no trace of the neoplasm was detected. Two of the patients died. The condition was classified as inoperable in thirty-six women. Preliminary radiation resulted in sufficient improvement to render subsequent operation possible. Nine women died and the disease was progressing in a further ten. The last category of thirty-six patients was composed of women who were suffering from recurrence after operation. Thirteen died; in eight the disease was progressing. Only two had apparently recovered. The remaining fifty-seven patients were suffering from either carcinoma of the stomach, intestines or cervix or epithelioma of various mucous and other regions or from rodent ulcer. Apparent recovery was registered five times. Death occurred forty-three times, while in four the disease was progressing.

The authors call attention to the general effect of the radiation on the patient. Headache, sickness and malaise occurred frequently. At times the exposure was followed by œdema. The authors hold that a curative effect of γ rays by means of radium is not to be expected unless attention be paid to the reaction of the normal tissues to these rays and unless close study be given to the question of dosage, of technique and to the advisability of combined radio-therapy and surgical removal of the growth.

Histological Changes Induced by Radium Rays.

Professor Lazarus-Barlow contributes two chapters on the histological changes produced by γ rays of radium on neoplastic and normal tissues. The details crowded in these two chapters are very profuse and there is a considerable amount of repetition. Unfortunately, no attempt is made to differentiate between the histological appearances of tissues lying within six centimetres of the radium capsule and those of tissues which were situated at a greater distance from the source of the γ rays. In summing up the effect of subjecting various malignant tumours to the influence of five grammes of radium for a period of five or six hours, Professor Lazarus-Barlow notes the disappearance of the cytoplasm from the neoplastic cells, the alteration of the nuclei and the degenerative changes extending throughout the whole mass. He attaches importance to the observation that the action on the cytoplasm is greater after the first than after subsequent exposures. Mitotic figures were rarely seen. Another effect of the rays was the collagenous changes of the connective tissue fibres in the growth. He states that few lymphocytes or small mononuclear cells are seen in advance of the growing edge of the tumour and that he had failed to obtain any evidence of proliferative changes in the connective tissue or epithelium.

The effects of exposing normal animals, including twenty frogs, twenty-eight rats, fifteen rabbits and nine cats to the effect of the γ rays of radium for periods varying between three and twenty-one hours is discussed at considerable length. The radium container was placed above the frogs, rabbits and cats and at the side of the rats. The distance of the capsule from the frogs and rats was four centimetres and from the rabbits and cats fifteen centimetres. The histological appearances are described of each tissue immediately after exposure and after a varying number of hours of survival. The most pronounced effects were observed in the blood and in the blood-forming organs. In all the animals there was a destruction of lymphocytes, even after short exposures. The polymorphonuclear cells appear to resist the effect of the rays for a considerable time. A later effect is the action on the erythrocytes. The spleen decreases in size at an early stage. There is a deficiency of the essential cells of the splenic pulp. The lymphocytes disappear almost completely and the Malpighian corpuscles are composed of pale endothelial cells, obviously in a state of degeration. Basophile nuclear débris is seen immediately after the exposure, but this soon disappears. Similar débris is found in the lymphatic glands, but in these structures it persists for a considerable time. The destructive changes affecting the bone marrow are associated with evidence of defective regeneration. The changes found in other organs and tissues include progressive loss of striation and the appearance of translucency in discrete patches in the voluntary muscles, as well as the deposition of granular material in the intermuscular spaces, some nuclear changes and a

[1] "Medical Uses of Radium: Studies of the Effects of Gamma Rays from a Large Quantity of Radium," by various authors; Special Report Series, Medical Research Council, Privy Council; 1922. London: Published by His Majesty's Stationery Office; Royal 8vo., pp. 151, with numerous illustrations. Price: 5s.

deposit of lipoid material. In unstriated muscles there is seen a swollen and at times fibrillar condition of the contractile elements and some vacuolation. The effect on endothelium appears to vary with its situation. In the arterioles it is scarcely affected, while in the gastro-intestinal tract the cytoplasm may be degenerate and the nuclei pale, irregular and large. The liver, kidney and adrenal are all more or less affected. Professor Lazarus-Barlow describes a variety of appearances which may be the result of the changes in the blood. He also describes a great variety of changes met with in the testicles and ovaries.

All the changes observed appear to increase during a considerable time after the exposure. The fact that the pancreas, salivary gland, thyreoid and para-thyreoid are seemingly unaffected by γ rays leads Professor Lazarus-Barlow to suggest that this increase in the effect is not entirely due to the secondary effects of the altered blood, but may be based on an initial vulnerability of particular tissue. He also postulates a destructive action of the γ rays on the activity of certain enzymes. He produced some evidence in support of both explanations. Moreover, he is convinced that the primary changes in the cells are of a physico-chemical nature. As γ rays are known to have the power to split up complex chemical compounds into their simpler constituents, he is inclined to the opinion that the constituents of the nucleus may be split up into bodies of lower molecular weight. This would have the result of increasing the intranuclear osmotic tension. Water would pass through the nuclear membrane and cause it to become more oval in shape. The lipoidal changes seen in the convoluted tubules of the kidney of the cat and elsewhere is explained on the assumption that the protein is disintegrated into fat. He is unable to provide an adequate explanation for the disappearance of cytoplasm and the freeing of the nucleus in the cell membrane in certain cells. In the gastro-intestinal tract cell destruction leading to desquamation and excessive mucus formation is noted, although the mechanism of the cellular changes is not understood. The author finds that it is easy to correlate the clinical symptoms with the histological appearances. The degenerative changes of the intestinal mucosa are associated with mucous diarrhœa, while the changes in the unstriated muscular coats of the stomach and small intestine are responsible for the distension of these organs.

Sir Frederick Mott and Dr. T. Morowoka are responsible for a chapter on the histological effects of γ rays of radium on the brains of frogs, rats, rabbits and cats. Although some minor changes were noted, the specimens of the brains of cats examined were practically normal. The authors come to the conclusion that in cats the central nervous system does not suffer appreciably, even after exposure to large quantities of radium rays. They suggest that the thick protective coverings of the brain may protect cats. Rabbits and rats, on the other hand, did not escape unharmed. In the latter the Purkinje cells of the cerebellum were severely affected. A definite accumulation of basophile substance fitting on the Purkinje cells like a cap or forming a crescent at one side of the cell was noted. The rest of the cells were more or less disintegrated. The basophile débris was found in all cells on the same side. This directional change does not appear to have been described before. In some instances not a single cell was normal. Chromatolytic changes were seen in other parts of the brain. In rabbits the chromatolysis was less developed, but was unmistakable. Attached to this chapter are some very beautiful reproductions of photo-micrographs of the sections.

Dr. Cecil Price-Jones contributes a short chapter on the histological changes in the bone marrow, amplifying the information given by Professor Lazarus-Barlow. He comes to the conclusion that rays of radium lead to a combined destruction of leucocytes, diminished formation of granular leucocytes and an exaggerated production of erythrocytes. The erythroblastic reaction is at its height at about the seventh day after exposure for sixteen hours to five grammes of radium.

The final chapter is in the form of a note on the average range of γ rays in different metals.

British Medical Association News.

SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held in the Lister Hall, Hindmarsh Square, Adelaide, on May 25, 1922, DR. BRONTE SMEATON, the President, in the chair.

Listerian Oration.

THE PRESIDENT, in introducing DR. ROTHWELL ADAM, stated that the Listerian Oration had been introduced as a feature of each year's programme by Dr. Newland, the first Oration having been delivered by Professor Allen. Since then the members of the Branch had had the advantage of hearing Dr. Stawell and Dr. Craig and, after an interval occasioned by the war, Mr. Fred. Bird. This year the Council had been fortunate in securing Dr. Rothwell Adam, who was so well known for his work in obstetrics.

DR. ROTHWELL ADAM then delivered the Listerian Oration on "The Influence Listerism Exercises on Obstetrics" (see page 175).

DR. A. A. LENDON proposed a hearty vote of thanks to Dr. Adam for his most interesting address and, in doing so, stated that he had always listened to these addresses with more pleasure than to any address at a congress.

DR. BRONTE SMEATON seconded the proposition, which was carried.

DR. ADAM thanked the proposer, seconder and the members.

Strangulated Hernia.

DR. A. F. STOKES read the notes of a report of a case of "Strangulated Right Inguinal Hernia Containing Stomach and Transverse Colon" (see page 187).

A MEETING of the New South Wales Branch of the British Medical Association was held at the Royal Prince Alfred Hospital, Camperdown, Sydney, on June 9, 1922, DR. T. W. LIPSCOMB, the President, in the chair.

Encephalitis.

PROFESSOR A. E. MILLS related the histories of three cases of interest from a diagnostic point of view, all presenting features somewhat in common. The first patient was a woman, aged twenty-seven years, hale and hearty, somewhat stout, but in good health. She went to bed one night feeling perfectly well and awakened her sister who was sleeping in the same room at midnight by sitting up in bed and talking nonsense; she talked about tying a lot of parcels with string. She lay down and again went to sleep. In the morning she got up and was able to do her hair. About one hour later her sister thought that she was looking strange. She suddenly became unconscious and was seized with convulsions. She remained in this condition till her death fifteen hours later. Professor Mills saw her a few hours before her death. At this time she had paresis of the right arm and the right leg, both of which were rigid. She had conjugate deviation of the eyes to the right. Her head was turned to the right. The condition looked like one of uræmia, though the state of the heart was not in keeping with this supposition and the condition of the blood vessels did not suggest the presence of arterio-sclerosis. She had passed her urine into the bed. A specimen of urine obtained just before her death proved to be normal on examination.

The second case was that of a young woman, aged twenty-four years, who lived in the same suburb as the patient previously mentioned. Professor Mills was called to see her by the same practitioner, but before he could get to the house the patient died. The history was very similar to the one first reported. She had been apparently in perfect health before the onset of the disease; she had suddenly been seized with convulsions, had become unconscious and had died fourteen hours later. The only dif-

ference in the second case was that the convulsive seizures had not been so violent nor so frequent.

The third was that of a woman who was apparently in good health. She was a squatter's wife. Her husband asked her to go out with him on the run, but she refused on the plea of having too much to do. This was at two o'clock in the afternoon. At three o'clock she was playing the piano. Between that time and five o'clock she became ill. Her husband came home at five o'clock and found her unconscious and convulsed. She remained in this condition for thirty-six hours and then returned to consciousness. Her right eye was then noticed to be closed. In addition to this she had paralysis of the third and fourth nerves. The sixth was intact. Professor Mills stated that, at the present time, the patient was getting back to normal health, though she was still in a state of mal-nutrition. No improvement of the paralysis had occurred.

In discussing the diagnosis of these cases Professor Mills pointed out that all of them were characterized by the sudden onset of coma and convulsions, which continued for many hours. In the first two cases the convulsive movements ended in death. In the third case, when the convulsions ended, the right eye showed complete paralysis of the third and fourth nerves. Professor Mills further said that it was not uncommon for a patient to lose power of the third and fourth nerves suddenly or in the course of a few hours. Such a condition was of vascular origin and due to a thrombosis following on a syphilitic endarteritis or atheroma of the vessels supplying the third and fourth cranial nerve nuclei; but such cases were not associated with coma or convulsions. In the third case, however, the patient's serum had not reacted to the Wassermann test, nor had there been any symptoms to suggest syphilis as the causative factor in the other two cases. The persistent convulsions pointed to a continuous irritative affection of the cells of the motor area, the coma being the result of a process abolishing the function of higher parts of the brain. In the absence of poisons by uræmia or alcohol in the form of absinthe and with no evidence of trauma, it would appear that the symptoms and signs present in these three cases could only arise from the presence of inflammatory or œdematous products—the result of a wide-spread infection of the brain. They were examples of a severe encephalitis. Wernicke had described two types of encephalitis, a superior type, affecting the cortex, accompanied by coma and convulsions, and an inferior type, affecting the pons and the medulla, leading to paralysis of the respiratory centre and death. But there could be no question that many varieties existed. In all these cases it was probable that the coma and convulsions had been due to cortical affection. In the first two cases death had been brought about by extension of the disease to the medulla. In the third case the disease process had also involved the mid-brain and destroyed the third and fourth cranial nerve nuclei.

Herpes Zoster Ophthalmicus.

DR. R. GRANVILLE WADDY showed a male patient, aged thirty-seven years, who had been suffering from *herpes zoster ophthalmicus* and was in the convalescent stage of the disease.

Watt Sling for Injuries of the Elbow Joint.

DR. J. COLVIN STOREY, O.B.E., showed a sling for the treatment of injuries to the elbow joint in the flexed position. This sling had been designed for Dr. Storey by a sergeant in the Camel Corps in Egypt, who had a fracture of the head of the radius. It was shaped like a rifleman's bucket. The flexed elbow of the patient was inserted into the sling and the sling was held in position by a long band which passed over the shoulder and round the waist of the patient.

A Retractor for Use in Amputations.

DR. STOREY also showed a flap retractor for use in amputations. This instrument had been copied from an instrument described in *The British Medical Journal* in 1917 and was improvised from part of a petrol tin. A slot was cut in the flat sheet of tin sufficient to admit the bone at the point of amputation. The pliability of the tin enabled an assistant to hold back the soft tissues during the actual operation.

Adeno-Carcinoma of Colon.

DR. STOREY showed a female patient, aged forty-two years. She had been admitted to the Royal Prince Alfred Hospital in June, 1921, with a diagnosis of acute appendicitis. The patient had given a history of acute pain in the abdomen, accompanied by vomiting for forty-eight hours prior to admission. Examination of the abdomen had revealed the presence of a tense, tender and freely movable tumour situated to the right of the umbilicus and about the size of a cricket ball. A provisional diagnosis of twisted ovarian cyst had been made. Incision through the right *rectus abdominis* muscle had shown the presence of a carcinoma of the hepatic flexure, together with many enlarged and adherent glands. The tumour had been widely excised and an end-to-end anastomosis made by means of a Murphy's button. The appendix had been found to be inflamed and had been removed. A tube drain had been inserted into the right flank. When the Murphy's button had separated a week later, a severe hæmorrhage had occurred. Recovery had been rapid and uneventful. Dr. Tebbutt had examined the growth and had reported it to be an adeno-carcinoma.

Two days after the operation Dr. Storey had been informed that a growth had been removed from the rectum of the same patient by Sir Alexander MacCormick in 1906. On looking up the notes made at that time, it had been discovered that a report by Professor Welsh had shown the tumour in question to have been an adeno-carcinoma. Sir Alexander had made an end-to-end anastomosis after using the sacral method of approach. Since the operation in 1906 the patient had given birth to five children and had been perfectly well until some inflammation around an absolutely independent growth had caused her to seek medical advice. In Dr. Storey's opinion it was quite likely that the urgent symptoms on this occasion had been due to the inflammation of the appendix. To-day the patient was quite well and had no trouble with the action of her bowels. Beyond a slight weakness of the abdominal wall, there was no disability.

Mid-Carpal Dislocation.

DR. STOREY also showed a man, aged thirty-two years, who had fallen with all his weight on to his right hand while playing football on May 7, 1922, and had sustained a mid-carpal fracture-dislocation. Dr. Storey stated that this injury presented the appearance of a Colles's fracture, except that the deformity was too low down. Skiagraphic examination always revealed a fracture of the scaphoid bone, a dislocation forwards of the semilunar bone, together with a dislocation backwards of the *os magnum* and the rest of the distal row of carpal bones. All attempts at reduction under anæsthesia were generally unsuccessful. Stimson in his book on fractures and dislocations advocated removal of the proximal fragment of the scaphoid and of the semilunar bone. As a result of his investigations on the cadaver Dr. Storey had come to the conclusion that the posterior incision between the tendons of the *extensor indicis* and the *extensor longus pollicis* muscles (Ollier's incision) was the most suitable. On May 17, 1922, Dr. Storey had adopted this incision and had removed the proximal end of the scaphoid and the semilunar bone. No ligatures had been tied in the field of operation. The hand had been put up in a slightly dorsiflexed position. It was a little early to show this patient, but there was already a little voluntary movement and it was hoped that the patient would have a useful wrist. Prior to operation Sir Alexander MacCormick had seen the patient and had advised the course adopted.

Diphtheritic Vulvitis.

DR. F. A. MAGUIRE, D.S.O., reported two cases of diphtheritic vulvitis (see THE MEDICAL JOURNAL OF AUSTRALIA, July 22, 1922, page 94).

Double Malignant Growth.

DR. B. T. EDYE showed a man, aged sixty-three years, an invalid pensioner, who was suffering from two distinct malignant growths, one of the upper lip and the other of the tongue. The tumour of the upper lip had first been noticed two years previouly as a "small, hard wart" on the right side, 1.25 centimetres above the free margin of the

lip. At the time of demonstration it measured three centimetres in diameter, had an ulcerated but dry surface, indurated, rolled-over edges and an indurated base. No enlarged glands could be discovered on the corresponding side of the neck. Clinically the tumour had the appearance of a rodent ulcer.

The tumour of the tongue had first been noticed five or six weeks previously, on account of soreness in the tongue itself and of pains which radiated over the area supplied by the auriculo-temporal nerve. The tumour involved the middle third of the left side of the tongue, was deeply ulcerated and surrounded by extensive indurations. It had spread to involve the anterior pillar of the fauces and the adjacent part of the tonsil and palate. The fact that the affected portions of the palate lay chiefly over the ulcer of the tongue suggested an involvement of the former by contact with the latter rather than by extension through the lymphatics. The patient was able to open his mouth freely and the tongue showed only a limited degree of fixation. Both these were favourable signs. There was a bulging in the left digastric region, due principally to the primary tumour; no enlarged glands were palpable lower down on the left side of the neck. The blood serum of the patient had yielded a definite reaction to the Wassermann test and there had been noticeable improvement with the administration of mercury and iodide of potash, together with a mouth wash of hydrogen peroxide. Dr. Edye said that this improvement was easily explained when consideration was paid to the definite inflammatory reaction which often accompanied malignant ulceration. A snipping from the edges of the ulcer on the palate had been examined by Dr. Marjorie Little and had been found to be squamous epithelioma.

Septic Arthritis of the Ankle Joint.

DR. EDYE also showed a girl, aged fourteen years, a shop assistant, who had been admitted to the Royal Prince Alfred Hospital on February 7, 1922, complaining of pain and swelling of the right ankle. Three weeks previously she had noticed pain in the ankle when walking. Swelling had occurred on the following day. Both pain and swelling had gradually increased and when admitted to hospital there had been marked redness and swelling around the joint and in the lower third of the leg, with extreme tenderness and severe pain on attempted movement. There had been fluctuation in front of the lateral malleolus. The temperature had been 39.2° C. and the pulse 108 per minute. After Dr. Abbott had seen the patient and advised immediate incision, Dr. Edye had opened the joint lateral to the tendon of the *peroneus tertius* muscle, evacuating thick, creamy pus. The foot had subsequently been supported at right angles on a back splint. From the pus a pure culture of *Staphylococcus pyogenes albus* had been obtained. Three days later an incision had been made medial to the tendon of the *tibialis anterior* muscle and more pus evacuated from the joint. It had been necessary to give morphine from time to time on account of severe pain. On the eleventh day the swelling behind the medial malleolus had become more prominent and the temperature, which had fallen to 37.2° C., had begun to rise again. On February 21 the swelling had been incised and an incision had also been made behind the lateral malleolus. From the pus a pure culture of *Staphylococcus albus* had again been obtained. On February 24 the temperature had been 39.8° C. and, subsequent to this, improvement had set in. The temperature had become normal on March 9 and there had been considerable reduction in the swelling, pain and discharge. A skiagram taken by Dr. Brett on March 2 had shown thickening of the joint surfaces on the medical aspect and some irregularity on the lateral aspect of the talus. When discharged from hospital on April 11, 1922, there had been a considerable range of movement at the ankle joint and the patient had been able to walk without pain. At the time of demonstration the movements of the affected ankle were equal to those of its fellow and, except for the scars, the anatomical appearances were normal.

Actinomycosis.

DR. EDYE, on behalf of PROFESSOR SANDES, showed a man who had been suffering from actinomycosis of the malar region for three months. The affected area had been incised and the discharge had shown the typical colour due to the streptothrix. The patient was improving on large doses of iodide of potash. Dr. Edye also stated that he had himself recently seen two cases of actinomycosis, one affecting the tongue and the other occurring in the foot. The diagnosis in both these patients had been in doubt until confirmed by a pathological examination. The granules in each instance had been black instead of the usual saffron colour.

Depressed Fracture of Skull.

DR. EDYE also showed another patient for PROFESSOR SANDES, a man who had received a severe injury to the head, resulting in a depressed fracture of the frontal bone. The site of injury had been freely opened up by Professor Sandes, damaged brain had been washed out and a drain had been inserted. The patient had at no time lost consciousness. Nine weeks after the injury the patient had been taken ill with an attack of vomiting. Professor Sandes had operated again and had inserted a bone graft from the tibia. At the time of demonstration the patient was quite well.

Demonstration of Skiagrams.

DR. H. R. SEAR demonstrated an interesting series of skiagrams. Amongst those which he showed, were the following: a foot containing an *os Vesalii*; a fracture of the trapezium and the base of the first metacarpal bone; a well marked gastric ulcer; a bone cyst in the phalanx of a finger; an osteo-arthritis of the knee, with loose bodies due to separation of osteophytes; a dislocation of the scaphoid bone in the wrist; a case of hydatid of bone with several daughter cysts; sacculated bronchiectasis following measles and whooping cough; a ring cancer of the descending colon; several cases of gall stones (on one plate Dr. Sear could count two hundred gall stones); a collapsed and calcified lung of unknown origin; an hydatid cyst situated behind the heart and a calcified fibro-myoma.

Open Reduction of Fractures.

MR. R. GORDON CRAIG exhibited an instrument for the open reduction of transverse fractures of long bones. It was designed on the principle of a motor tire lever, about 37.5 centimetres (fifteen inches) long and 2.5 centimetres (one inch) wide at one end, tapering to 1.25 centimetres (half an inch) wide at the other end. After exposure of the ends of the fractured bone through a suitable incision the lever was inserted between the proximal and distal fragments. The lever, when in position between the overlapping fragments, was almost in the long axis of the limb. By bringing the long arm of the lever into a horizontal position transverse to the long axis of the limb the two fragments were lifted or levered into place with the instrument lying between them. When this was accomplished, the lever was withdrawn, the fragments came into apposition and were held there by the tonus of the limb muscles. The manipulation was comparable to the method of putting a motor tire on to the rim of a wheel by a tire lever.

Pyelography and Hydronephrosis.

MR. GORDON CRAIG also exhibited a number of pyelograms, showing a series from a normal renal pelvis up to a hydronephrosis with a capacity of one hundred and twenty cubic centimetres. Four of the largest hydronephroses from which the pyelograms had been taken were shown as mounted pathological specimens and a *résumé* of the clinical histories given with the findings at operation. Mr. Gordon Craig drew attention to the fact that all the specimens shown were examples of hydronephrosis of the so-called primary type. In none of them had the hydronephrosis been associated with an aberrant artery crossing the uretero-pelvic junction and causing a kink or obstruction at that level. The primary or idiopathic hydronephrosis was ascribed to stricture of the ureter, probably secondary to a stone in the pelvis or ureter during infancy or intra-uterine life. Hydronephrosis of the large type was always associated with intermittent obstruction in the ureter, usually at the uretero-pelvic junction. Obstruction of the permanent type, such as stricture of the urethra or enlargement of the prostate, produced as an end result a certain amount of dilatation of the ureter and pelvis of

the kidney, but of a much smaller type than that produced by intermittent obstruction.

Casein-Glue Splint.

DR. D. J. GLISSAN demonstrated a splint, made of casein and glue and explained how it was prepared. Casein was precipitated from skim milk, by the addition of a weak acid. Acetic acid was generally used. The casein was then washed, treated for the removal of fat and dried. It was then dissolved in an aqueous solution of an alkali to form glue. The splint demonstrated by Dr. Glissan was a short spica for the hip to control the joint in the final stage of tuberculous infection. It had been moulded on an accurately made cast of the middle portion of the child's abdomen, pelvis and thigh. It was composed of a special variety of brown paper, book muslin and the casein glue. It fitted accurately and, as Dr. Glissan pointed out, was light, inexpensive and easily made. The child had been wearing the splint for a little more than one month. This was not a sufficiently long period to judge finally of its wearing properties, but there was every prospect of the latter being satisfactory.

Perthes's Diseases.

DR. GLISSAN also showed a girl, aged thirteen years, who had complained of pain in the right knee seven and a half months ago. This had been followed shortly by a limp. The parents had then noticed that the child was knock-kneed. One month previous to demonstration she had begun to complain of pain in the left knee. The patient was a very fat, heavy child and had always been so. The family history was clear. Close questioning had failed to elicit history of trauma. There had been no complaint of pain in the region of the hip. The patient walked with a waddling gait, the dip to the right being more pronounced. There was real shortening of two centimetres on the right side. There was double *genu valgum* of more than moderate degree, with well-marked lateral instability of both knees in the extended position, but no sign of any inflammatory condition in or about these joints. There was the usual accompanying valgus condition of the sub-astragaloid joints. The hip joints showed equal and painless movements, with the exception of abduction, which was slightly restricted on the right side. A von Pirquet test had failed to yield a reaction. X-ray examination had shown the left hip to be normal, while the right femoral head was flattened, enlarged and "mushroomed" over the neck, which was shortened, broadened and depressed on to the shaft of the bone. The acetabulum showed no change. Dr. Glissan said that the diagnosis appeared to rest between an old epiphyseal separation (traumatic *coxa vara*), adolescent rickets or Perthes's disease. In view of the clinical phenomena and the radiographic findings the last named condition was undoubtedly present. The treatment followed in this case had been the relief of weight bearing from the femoral head by means of a walking caliper. This had immediately been followed by relief of the pain in the knee. The caliper that was being used was somewhat faulty in that it did not take purchase off the *tuber ischii*. It would have to be altered in this respect. The relief from pain that had been experienced thus bore no relation to the relief of weight bearing. Strain on the knee joint had, however, been relieved and the joint was being held in the correct position. Dr. Glissan came to the conclusion that the pain from which the child had been suffering, had in all probability been associated with increasing body weight, causing an exaggeration of the *genu valgum* deformity.

Dr. Glissan pointed out that Perthes's (or, as it should be called, Legg's) disease was an affection of the upper femoral epiphysis. It was usually unilateral, showed its greatest incidence between the fifth and tenth years of life and affected males more frequently than females. Clinically it was characterized by moderate limitation of movement at the hip joint, usually more noticeable in abduction. There might be slight shortening. In the early stages it was likely to be confused with tuberculous disease of the hip joint. The diagnosis rested on the skiagraphic appearances, which were distinctive. In the early stages the epiphysis appeared flattened and broadened. The epiphyseal cartilage was irregular in outline. Some observers described clear areas in the neck of the femur below the epiphyseal cartilage. The neck was atrophied. Later on the typical "mushrooming" of the head over the thickened, shortened and depressed neck appeared. Fromme held that the disease was a manifestation of late or adolescent rickets and Jensen maintained that the condition was a result of a congenital "latero-position" of the head of the femur in its relation to the acetabulum. Dr. Glissan thought that the problem to be solved in connexion with this disease was to determine whether it was a process confined to the upper femoral epiphysis or a manifestation of a condition affecting other epiphyses, which, not being subjected to the mechanical strain peculiar to the hip joint, lacked the distinctive changes which made possible its recognition by X-rays at the latter site.

Double Malignant Disease of the Breast.

DR. ST. J. W. DANSEY detailed the history of a woman, aged fifty-two years, who had noticed a thickening of the left nipple eighteen months previously. A few months later this thickening had become ulcerated. From time to time this ulcer had become covered by a scab, which, on coming off, had revealed a larger ulcerated surface beneath. Nine months ago this patient had noticed in the same breast a lump which had gradually increased in size. There had been no pain. Examination of the left breast had shown an ulcerated area about 1.25 centimetres in diameter situated in the areolar region about the nipple. Immediately around this there had been a red, eczematous condition of the skin. The breast below the nipple had shown the presence of a movable, hard mass about the size of a walnut. There had been no tenderness and no retraction of the nipple. Hard, enlarged glands had been felt at the lower border of the pectoral muscle. None had been discovered on examining the axilla. Dr. Dansey had undertaken radical removal of the breast and of the glandular areas. The patient had left hospital a fortnight later with a well healed scar and free movements of the arm, to attend the X-ray department for full and extensive applications over and around the operated regions. Pathological examination had shown the superficial skin lesion to have been an epithelioma, while the deeper mass had shown a typical scirrhus structure. The infected glands had been epitheliomatous. Dr. Dansey said that the pathological examination and sections obtained in this case proved that the so-called Paget's disease of the breast was an epithelioma starting in the skin of the nipple and its areola and not, as Bland Sutton held, secondary to a sublying scirrhus which blocked the lymphatics draining the skin above and so caused an eczematous condition which later became invaded by extension of the scirrhous tumour along the lymphatics.

Myeloma of the Mandible.

DR. DANSEY also showed a man, aged twenty years, who had been sent into hospital suffering from a parotid tumour. This had been incised some weeks previously, but no suppuration had been found. The patient had suffered no pain, but had complained of some stiffness of the jaw on the affected side and had thought that the swelling had increased while eating. Dr. Dansey had then made an incision, under ether anæsthesia, starting from below the ear and extending well forward below the mandible. The parotid gland and the overlying tissues had been reflected upwards as a whole, the facial nerve being avoided. When the ascending ramus of the mandible was exposed it had been recognized as being the seat of infiltration by a soft, spongy, vascular mass which, on pathological examination, had proved to be a myeloma. The whole of the ascending ramus of the mandible had then been removed from the articulation to the angle. The removed mass had shown the presence of very little remaining osseous tissue. The myeloma on its deeper surface had burst through its capsule and had invaded the sublying pterygoid muscles. The attempt to scrape away the infiltrated tissues had had to be abandoned, as it had been found impossible to get beyond the limits of the growth. Four days after operation X-ray exposures had been commenced, applications being made from both sides of the head. This had been continued at intervals until the time of demonstration. Dr. Dansey pointed out that at the present time, nine

months after the operation, the patient was in the best of health and had put on a stone in weight.

Dr. Dansey showed photographs of the patient before operation and pointed out that great diminution of the swelling had taken place. He further stated that this case demonstrated the power that X-rays had of destroying or at any rate impairing the growth of soft-celled neoplasms such as lympho-sarcoma and myeloma. Dr. Dansey expressed the opinion that, however hopeless such growths might appear, treatment should not be given up without the use of a prolonged course of X-ray treatment.

NOTICES.

THE COUNCIL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION has arranged the following provisional programme of the Branch meetings. The Scientific Committee reserves to itself the right to modify the arrangements, but it is hoped that no changes will be necessary.

September 6, 1922.

CLINICAL MEETING at St. Vincent's Hospital, Melbourne, at 8.15 p.m..

October 4, 1922.

At the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne Hospital, at 8.15 p.m.

DR. H. DOUGLAS STEPHENS: "Clinical Symptoms of Enlarge- of the Spleen in Children."

DR. S. O. COWEN: "Familial Splenomegaly."

DR. K. HILLER will open the discussion.

A MEETING of the Section of Pædiatrics of the New South Wales Branch of the British Medical Association will be held in the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on August 18, 1922, at 8 p.m.. Papers will be read on the nutritional disorders of infancy by DR. L. R. PARKER, DR. J. MACDONALD GILL and DR. MARGARET HARPER.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

DUNLOP, ALBERT TANGE, M.B., Mast. Surg., 1913 (Univ. Sydney), 185, Macquarie Street, Sydney.

WILSON, KENNETH JOSEPH GILMORE, M.B., Ch.M., 1922 (Univ. Sydney), Mental Hospital, Gladesville.

Obituary.

THOMAS MYLES.

THE news of the death of Thomas Myles at Randwick, Sydney, on June 27, 1922, which was recorded in our issue of July 8, 1922, was received with much regret by his friends in the medical profession.

Thomas Myles was born in Limerick, Ireland, on April 29, 1868. He was educated at Preston Grammar School, Lancashire, England, and went to Dublin to study medicine. Here he entered Trinity College and graduated as bachelor in arts, medicine and surgery in 1890 at the early age of twenty-two years. Subsequently he took the degree of master of arts. Two years later he obtained the degree of doctor of medicine of his *alma mater*. He started practice at Wigton, Cumberland, England, and here he achieved considerable success. His endeavour at this time to keep himself quite *au fait* with the progress of medical knowledge is evidenced by the fact that in 1905 he was admitted to the Fellowship of the Royal College of Surgeons of Edinburgh. Subsequently he came to Australia and settled at Bellingen, on the north coast of New South Wales. He soon established himself here and remained in active practice till two months prior to his death.

Thomas Myles was a successful practitioner and devoted himself more particularly to the surgical side of his profession. In his early days he was a keen cricketer and was always an enthusiastic yachtsman. In fact, the first indication of his failing health occurred during a yachting trip from Bellingen to Sydney. He put up a great fight against increasing ill-health and when he was finally forced to relinquish practice, he did so with the knowledge that his days were numbered. He was beloved by his patients, many of whom came continually to his bedside with solicitous inquiry. His wife and daughter, who survive him, will have the sympathy of a large circle of friends.

REGINALD BOWMAN.

WE regret to announce the death of Dr. Reginald Bowman, of Parramatta, New South Wales.

Correspondence.

DRIED MILK.

SIR: Not the least interesting feature of your issue of July 15 is a report from your Analytical Department on "Lactogen." In this evidently carefully considered and authoritative statement, your investigator, after indicating that "Lactogen" "possesses the components of milk in such proportions as to render it a food of the same nutritive value as cows' milk" goes on to say: "These figures show that 'milk' prepared from 'Lactogen' with sterile water contains far fewer bacteria than even the best fresh dairy milk"; and, further, that while animal tests for vitamins had not been made: "The mode of preparation is unlikely to injure the fat-soluble vitamin A, nor would it probably diminish to any serious extent the anti-scorbutic food accessory substance."

My object in drawing attention to these statements is to raise the question whither does this lead us? The object of information of the kind given in the report must be to direct professional action. My own reading of the direction given (and in this, to avoid the finger of calumny, I seek the safety of numbers and include other milks which conform to the tests) accords with an opinion which I have long held, but have scarce ventured to voice and even now put forth in the security afforded by the protective ægis of the belted knight whom I quote. In *The British Medical Journal* of April 29, 1922 (page 681), "Milk and the Public Health," thus: "Sir Andrew Horne mentioned the gradual evolution of infant feeding from the time when he was a student in the Rotunda Hospital, where a large number of wet nurses were employed, through the various stages of bottle feeding. In his experience cows' milk was a dangerous food for infants during the summer months and dried milk was accordingly used by him."

To my mind "fresh cows' milk" has been something of a fetish to the profession. In fact, I come boldly into the open and say that, in my opinion, certainly under the conditions of milk supply, etc., obtaining in Australia at present, much more disease and disability has arisen from the use of "fresh cows' milk" than from the use of preserved milks. The difficulty of avoiding bacterial contamination of fresh cows' milk is so vastly greater than in the preparation of the food from the dried and other preserved milk, that I am satisfied that, in the majority of cases, it is safer to concentrate (at all events in the summer) on the effective use of preserved than to endeavour the direful task of education to the safe habitual use of "fresh cows' milk."

The risk of deficiency diseases is small in comparison with that of infective gastro-intestinal conditions, even if we omit the vexed question of tuberculosis.

In the Hospital for Sick Children in Brisbane, while the "gastro" ward is a central and tragic feature of hospital work, the occurrence of a case of rickets or scurvy is almost an excuse for a special clinical meeting.

"Dr. Ellen Webb" (*The British Medical Journal, loco citato*) "expressed the opinion that there was no really satisfactory substitute for fresh, clean cow's milk. She had not been successful in the use of dried milks and preferred condensed milk supplemented by cod liver oil, orange

juice and raw eggs!" Evidently "fresh, clean cows' milk" is not always procurable, even in Ireland. In this instance I am not, I fear, entirely on the side of the angels.

Yours, etc.,

A. GRAHAM BUTLER.

P.S.—Couldn't the Department run to a few "animal tests"?

FEDERAL INCOME TAX DEDUCTIONS.

SIR: Re income tax returns. In 1915 I bought a "Ford" motor-car with accessories for £300. I spent until last May, say, £200 on it for repairs and maintenance. I then sold it for £95 and bought a new one for £300. Am I allowed any deduction for loss in transaction?

Yours, etc.,

"PROFESSIONAL."

June 27, 1922.

[OUR correspondent, having bought a motor-car in 1915, would have deducted 12½% as depreciation for the financial year ended June 30, 1916, and for each successive year up to June 30, 1921. The deductions allowable would be as follows: 1915-1916, 12½% on £300 = £37 10s.; 1916-1917, 12½ on £262 = £32 15s.; 1917-1918, 12½% on £230 = £28 15s.; 1918-1919, 12½% on £201 = £25 2s. 6d.; 1919-1920, 12½% on £176 = £22; 1920-1921, 12½% on £154 = £19 5s.. He then obtained cash to the extent of £95, which reduced the remaining cost of his car to £39 15s.. The Federal Income Tax Commissioner would not make any further allowance. The proportion of the £200 spent on repairs each year can be deducted in full. If our correspondent has not claimed these deductions it would be advisable for him to do so now, explaining to the Commissioner the circumstances.—EDITOR.]

Books Received.

AIDS TO BACTERIOLOGY, by William Partridge, F.I.C.; Fourth Edition; 1922. London: Baillière, Tindall & Cox; Fscp. 8vo., pp. 276. Price: 5s. net.

TAYLOR'S PRACTICE OF MEDICINE, by E. P. Poulton, M.A., M.D. (Oxon.), F.R.C.P. (Lond.), with the assistance of C. Putnam Symonds, M.A., M.D. (Oxon.), M.R.C.P. (Lond.), and H. W. Barber, M.A., M.B. (Camb.), F.R.C.P. (Lond.); Twelfth Edition; 1922. London: J. & A. Churchill; Royal 8vo., pp. 980, with 24 plates and 87 text figures. Price: 30s. net.

Medical Appointments.

THE undermentioned have been appointed Public Vaccinators in Victoria: DR. R. D. FISHER (B.M.A.) at Sorrento; DR. H. H. MCWILLIAMS (B.M.A.) at Mildura; DR. S. M. WILCOX at Macarthur.

* * * *

DR. A. L. STAFFORD (B.M.A.) has been appointed Government Medical Officer at Berry, New South Wales.

* * * *

DR. G. O. ROBERTSON (B.M.A.) has been appointed Government Medical Officer at Gundagai, New South Wales.

* * * *

THE undermentioned have been authorized by the Board of Health of New South Wales as Inspectors under the *Cattle Slaughtering and Diseased Animals and Meat Act, 1902*: DR. L. J. HUNTER, M.C. (B.M.A.), at Belligen; DR. F. N. WADDELL (B.M.A.) at Dora Creek.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

BROKEN HILL AND DISTRICT HOSPITAL: Junior Resident Medical Officer.

THE ROYAL SOCIETY OF LONDON: Foulerton Research Professorship.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Societies Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Hampden District Hospital, Kuridala, North Queensland Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

AUG. 15.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
AUG. 15.—Illawarra Suburbs Medical Association, New South Wales.
AUG. 16.—Western Australian Branch, B.M.A.: Branch.
AUG. 17.—Victorian Branch, B.M.A.: Council.
AUG. 17.—Brisbane Hospital Clinical Society: Meeting.
AUG. 22.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
AUG. 24.—Brisbane Hospital for Sick Children: Clinical Meeting.
AUG. 25.—New South Wales Branch, B.M.A.: Branch.
AUG. 25.—Queensland Branch, B.M.A.: Council.
AUG. 30.—Victorian Branch, B.M.A.: Council.
AUG. 31.—South Australian Branch, B.M.A.: Branch.
SEPT. 1.—Queensland Branch, B.M.A.: Branch.
SEPT. 6.—Victorian Branch, B.M.A.: Branch.
SEPT. 7.—New South Wales Branch, B.M.A.: Nomination of Candidates for Federal Committee.
SEPT. 8.—New South Wales Branch, B.M.A.: Clinical Meeting.
SEPT. 8.—Queensland Branch, B.M.A.: Council.

Editorial Notices.

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